Hope Bay Mining Limited

Doris North Gold Mine Project: Air Quality Compliance Report for Section 4 Item 30 of the Project Certificate

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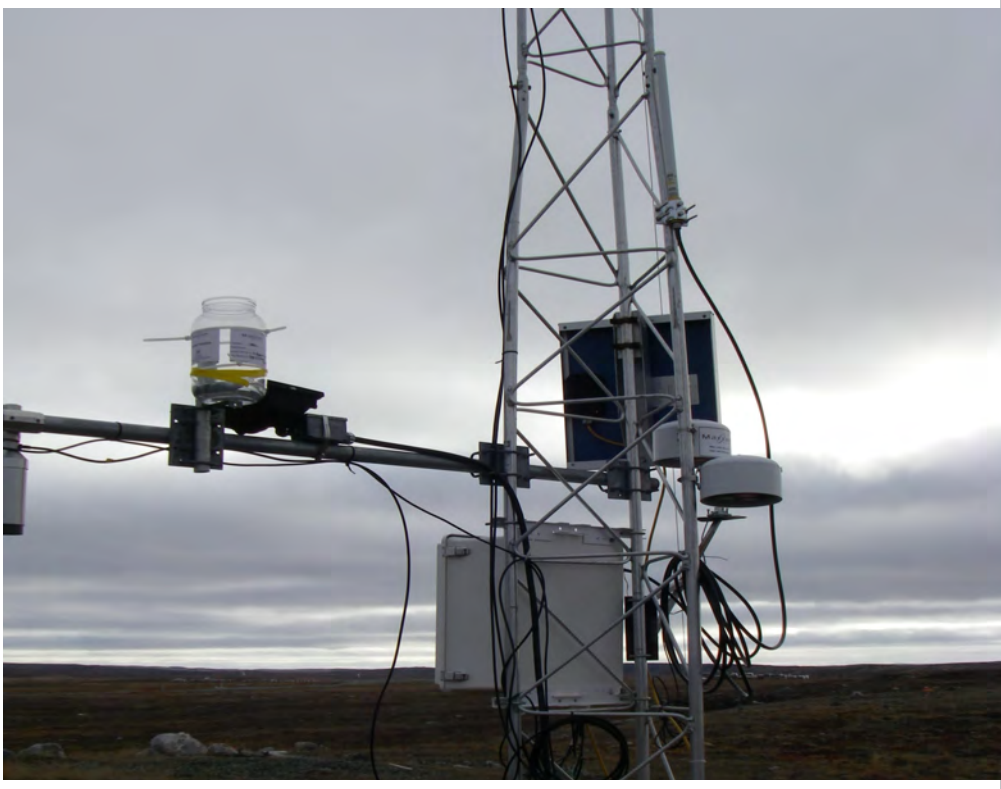

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November 2009

Executive Summary

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Executive Summary

The following atmospheric monitoring requirements are outlined in the Doris North Gold Mine Project Certificate (NIRB No. 003, issued September 15, 2006):

1. Section 4.0. Item 8. Newmont will fund and install a weather station at the mine site to collect atmospheric data, including air temperature and precipitation. The design and location of this station shall be developed in consultation with Environment Canada officials.
2. Section 4.0. Item 30. Newmont will install and fund an atmospheric monitoring station. This station and its location shall be developed in consultation with EC and HC air quality officials and focus on particulates of concern generated at the mine site. The results of air-quality monitoring are to be reported every 6 months to NIRB through the Monitoring Officer, and from there to all of the parties.
3. Commentary: NIRB expects that Canada Wide Standards for Dioxins and Furans and the Canada Wide Standards for Mercury will apply and should be followed including stack testing of incinerators.

This report is intended to meet the requirements outlined in bullet 2 above. Separate reports will be submitted for the remaining bullets.

In order to comply with Item 30 in Section 4.0 of the Project Certificate, Newmont Mining Corporation (Newmont) along with Rescan Environmental Services (Rescan) conducted the following activities in 2009:

- Consulted with Mr. Dave Fox (Air Protection Management Analyst) of Environment Canada on the operation and location of the two Partisol samplers and the ambient air quality monitoring station prior to installation;
- Collected measurements of particulates of concern, including both suspended particulate matter (by the use of 2 Partisol samplers which measured PM_{10}, $PM_{2.5}$ and TSP) and dustfall (5 dustfall monitoring stations); and
- Collected measurements of ambient air quality, including sulphur dioxide, nitrogen dioxide, and ozone (SO_2, NO_2 and O_3; by the use of 2 Passive Air Monitoring Systems (PASS)).

Two continuous suspended particulate matter samplers (Partisol instruments manufactured by Thermo Fisher Scientific) and three dustfall collectors were installed in early summer 2009 to improve the previous ambient air quality monitoring program. The ambient air samplers (PASS) were installed in March 2009.

The samples collected for particulate matter (PM_{10}, $PM_{2.5}$ and TSP), dustfall and SO_2, NO_2 and O_3 were analyzed at an accredited laboratory. All parameters were compared with the Nunavut Environmental Guideline for Air Quality Sulphur Dioxide and Suspended Particulates, and the National Ambient Air Quality Objectives (NAAQOs) established under the Canadian Environmental Protection Act (CEPA). 2009 air quality monitoring results indicated that there were no exceedances for any of the monitored parameters, and results were indicative of background concentrations associated with undeveloped areas.

Table of Contents

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DORIS NORTH GOLD MINE PROJECT: AIR QUALITY COMPLIANCE REPORT FOR SECTION 4 ITEM 30 OF THE PROJECT CERTIFICATE

Table of Contents

Executive Summary I

Table of Contents III

List of Appendices IV

List of Figures IV

List of Tables IV

List of Plates IV

Abbreviations and Definitions VI

1. Introduction 1–1

2. Particulate Matter 2–1

2.1 Suspended Particulate Matter 2–1

2.1.1 Site Selection 2–1

2.1.2 Monitoring Method 2–1

2.1.3 Results and Comparison 2–4

2.2 Dustfall 2–7

2.2.1 Site Selection 2–7

2.2.2 Monitoring Method 2–7

2.2.3 Results and Comparison 2–9

3. Ambient Air Quality Monitoring by Passive Samplers 3–1

3.1 Site Selection 3–1

3.2 Monitoring Method 3–2

3.3 Results and Comparison 3–2

4. Results and Discussion 4–1

References R–1

List of Appendices

Appendix 1. Suspended Particulate Matter Results (TSP, PM10 and PM2.5) Partisol Samplers

Appendix 2. Passive Ambient Air Quality Results

Appendix 3. Dustfall Analysis Results

Appendix 4. Standard Operation Procedure for Partisol Ambient Air Quality Samplers

List of Figures

FIGURE **PAGE**

Figure 2.1-1. Total Suspended Particulate (TSP), PM_{10} and $PM_{2.5}$ Monitoring Station 2–2

Figure 2.1-2. $PM_{10}/PM_{2.5}$ Sampler Simplified Diagram 2–5

Figure 2.2-1. New Dustfall Stations, Passive Samplers and Existing Dustfall Station 2–8

List of Tables

TABLE **PAGE**

Table 1.1-1. PM_{10} and $PM_{2.5}$ Results 2–6

Table 1.1-2. Total Suspended Particulate Results 2–7

Table 1.2-1. Dustfall Results (New Stations) 2–9

Table 1.2-2. Dustfall Results (Previously Installed Stations) 2–10

Table 1.2-3. Dustfall Limits in Several Jurisdictions 2–10

Table 2.3-1. Passive Ambient Air Quality Monitoring Results 3–3

Table 2.3-2. Ambient Air Quality Limits 3–3

List of Plates

PLATE **PAGE**

Plate 2.1-1. The Partisol ambient air samplers are located at the top of a butte that is approximately 660 m north of the Doris camp. Doris Lake is shown in the background of this photograph. 2–3

Plate 2.1-2. Temperature controlled shelter housing the Partisol ambient air samplers, late August 2009. 2–3

Plate 2.1-3. Inside the temperature controlled shelter the Partisol sampler for TSP is shown on the left and the PM10/PM2.5 sampler is on right 2–4

Plate 2.1-4. The new Partisol air sampler filters are contained in a magazine on the left side of the unit. The filters laden with suspended particulate matter are contained in a magazine on the right side of the unit..... 2–6

Plate 2.2-1. Dustfall monitoring station three near the Doris project site. For locations using the ASTM (2004) method two sample containers are required to provide a sufficient volume of sample for the various parameters (e.g. particulate, anions, cations, total metals). Locations using the Alberta Environment (AMD 1989) method only require one collector. 2–9

Plate 3.1-1. The white circular device shown in this photo is the passive air sampling system near the Doris automated meteorological station. 3–1

Plate 3.2-1. Passive air samplers under a rain shelter. 3–2

Abbreviations and Definitions

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Abbreviations and Definitions

Air Quality Standards	Objectives for maximum concentrations of criteria air contaminants in the atmosphere developed to ensure long-tern protection of public health and the environment.
Ambient Air Quality	The outdoor air quality at particular site.
ASTM	American Society for Testing and Materials.
BCMoE	British Columbia Ministry of Environment.
Criteria Air Contaminants	Contaminants for which environmental regulatory agencies have established ambient air concentration limits.
Fugitive Dust	Particulate matter, often sand or mineral dust, released to the atmosphere by mechanical disruption of soil or by wind scouring.
Inhalable particulate matter (PM10)	PM10 particles are airborne particles that have a diameter of 10 µm or less and are thus a subset of total suspended particulate. The majority of PM10 particles are from fugitive dust sources. PM10 can enter the respiratory system and have been linked to health problems.
Oxides of Nitrogen (NOx)	NOx gas primarily consists of nitrogen oxide (NO) and nitrogen dioxide (NO2). The gases are emitted with exhaust from combustion engines and products from blasting operations. NOx can be converted to nitric acid in the atmosphere and thus contribute to acid deposition.
Ozone (O_3)	A colorless, odorless reactive gas naturally found in the earth's stratosphere, where it absorbs the ultraviolet component of incoming solar radiation that could be harmful to life on earth. It is also found near earth's surface where pollutants emitted from human activities react in the presence of sunlight to form ozone. How sunny weather and stagnant conditions favor ozone formulation. The principal pollutants involved in these reactions are NOx, volatile organic carbon (VOC) and carbon monoxide (CO).
Respirable particulate matter ($PM_{2.5}$)	PM2.5 particles are a subset of PM10 and are defined as particles with a diameter less than 2.5 µm. These particles are small enough to enter deep into the respiratory system. The majority of PM emitted in diesel engine exhaust is PM2.5.
Sulphur Dioxide (SO_2)	Fossil fuel contains a small amount of organic compounds. During fuel combustion, the sulphur is oxidized and emitted as SO2 gas with the engine exhaust. In the atmosphere, SO2 can further oxidize to sulphate particles, which contribute to acid deposition.
TSP	Total suspended particulates (TSP) are solid matter or liquid droplets from smoke, dust, fuel ash, or condensing vapours that can be suspended in the air.
USEPA	United States Environmental Protection Agency. The USEPA has promulgated a variety of guidelines, objectives, emission factors, air dispersion modelling procedures and statutes for the protection of ambient air quality.

1. Introduction

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In order to comply with Item 30 in Section 4.0 of the Project Certificate, Newmont Mining Corporation (Newmont) along with Rescan Environmental Services (Rescan) conducted the following activities in 2009:

- Collected measurements of particulates of concern, including both suspended particulate matter (by the use of 2 Partisol samplers) and dustfall (5 dustfall monitoring stations); and
- Collected measurements of ambient air quality, including sulphur dioxide (SO_2), nitrogen dioxide (NO_2), and ozone (O_3, by the use of 2 Passive Air Monitoring Systems (PASS)).

As required in the Project Certificate, the locations for the instruments used to measure the above parameters along with the monitoring objectives were reviewed and approved by Mr. Dave Fox (Air Protection Management Analyst North, Environment Canada, Yellowknife).

Chapter 2 of this report provides the results from the particulate matter (both suspended particulate matter and dustfall) measurements, and Chapter 3 of this report provides the results from the passive ambient air quality samplers for SO_2, NO_2 and O_3. Chapter 4 provides a brief discussion of the results.

2. Particulate Matter

2. Particulate Matter

Particulate matter is a criteria air quality contaminant (CAC) associated with mining and mineral processing operations. It is generated by mobile equipment, crushing, blasting, bulk handling and storage and other associated mineral processing and construction activities. As part of the ambient air quality compliance monitoring program, particulate matter was monitored in 2009 at various locations for the concentration of suspended particulate matter and dustfall.

2.1 SUSPENDED PARTICULATE MATTER

Suspended particulate matter (SPM) in ambient air generally is a complex, multi-phase system of all airborne solid and low vapor pressure liquid particles having aerodynamic particle sizes from 0.01 to 100 µm in diameter and larger. SPM concentrations in ambient air were monitored using two Partisol samplers located on the butte near the Doris camp. The site selection, methods and results are presented below.

2.1.1 Site Selection

As with any type of ambient air monitoring study, the validity of conclusions depends on representativeness of the sample data. Therefore, the sampling location and the siting of the ambient air samplers are important.

Nunavut does not have established siting requirements for ambient air samplers. Therefore, the siting criteria from the British Columbia Ministry of Environment (BC MoE 2009) and the USEPA methods (USEPA 2009 and USEPA 1999) were used.

Additional factors, not specified in standard site selection criteria, were also considered. Due to the very cold climate the Partisol samplers were installed inside a temperature controlled shelter. As a result the sample schedule interruptions potentially caused by cold weather, wet conditions and excess humidity (filter conditioning), air leaks and pump malfunctioning will be minimized. The Partisol air sampler location is free from obstructions and nearby pollutant sources that may cause interference in suspended particulate monitoring (Figure 2-1.1 and Plates 2-1.1 and 2.1-2).

2.1.2 Monitoring Method

Suspended particulate matter is being monitored by the Partisol ambient air samplers in three forms; TSP, PM_{10} and $PM_{2.5}$. The Partisol plus model 2025 ambient air sampler monitors TSP and the Partisol Sequential Dichotomous Model 2025D ambient air sampler monitors PM_{10} and $PM_{2.5}$ simultaneously (Plate 2.1-3). The Partisol instruments are widely used in Canada for compliance monitoring programs and are recognized as reference equivalent methods by the USEPA (USEPA 2009).

The Partisol ambient air samplers draw a particulate-laden ambient air stream through a size-selective inlet, and then through a 47 mm diameter filter. A built-in pump provides the vacuum required to pull the air flow through the sample filter and a volume flow controller monitors and automatically adjusts the flow rate (Figure 2.1-2). The filters, approved for use with the Partisol ambient air samplers, were the Pallflex TX40H120-WW teflon coated fibre glass type. The Partisol air sampler filters are pre and post weighted at a laboratory that is accredited by the Canadian Association for Laboratory Accreditation (CALA).

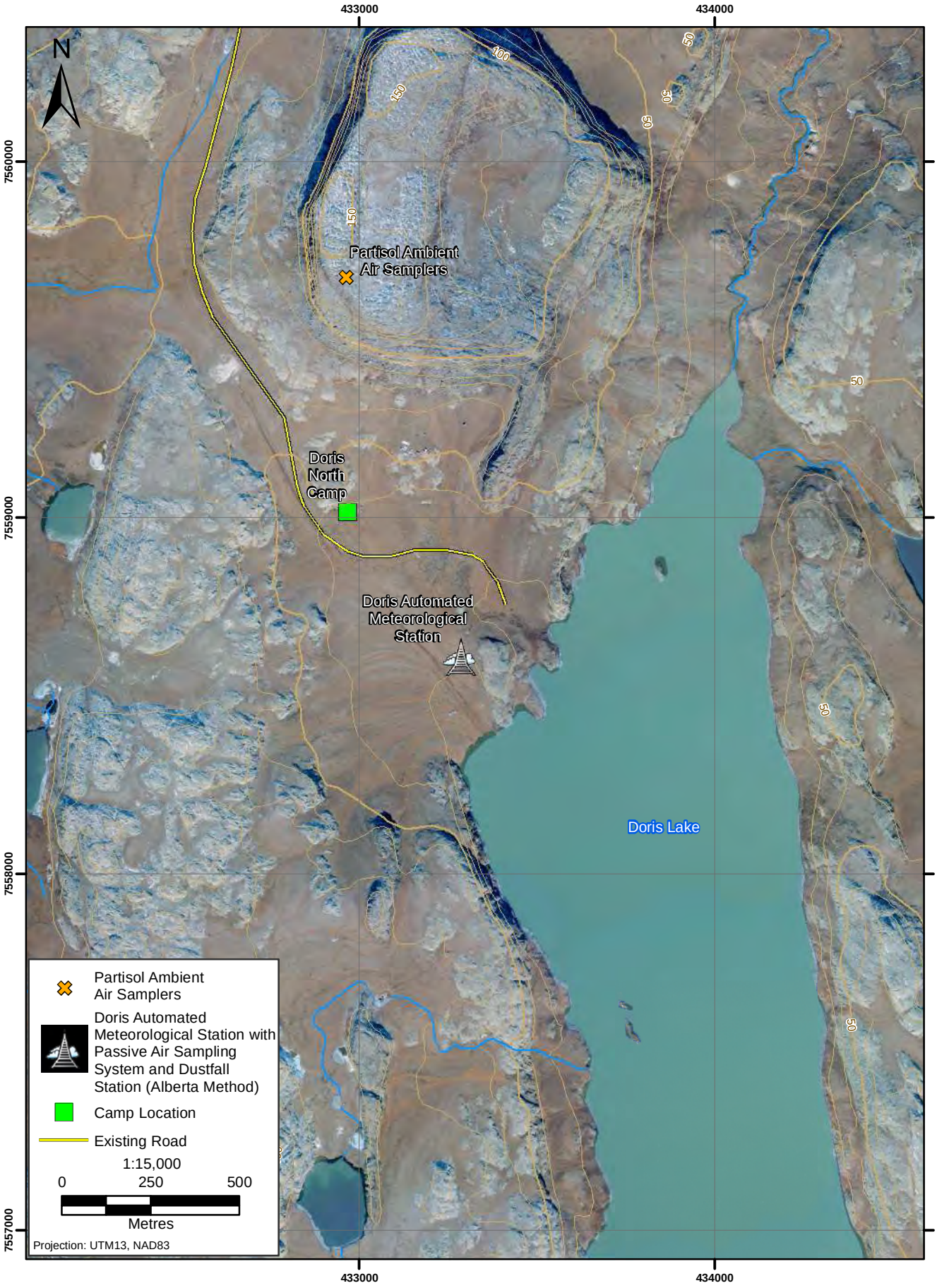

Figure 2.1-1

Location of Partisol Ambient Air Samplers for Total Suspended Particulate (TSP), PM_{10} and $PM_{2.5}$

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Partisol Ambient Air Samplers Location (TSP, PM10, PM2.5)
Doris Meteorological Station
New Dustfall Station (DF2)
Existing Dustfall Station
Passive Air Samplers (NOx, SO2, O3)

Plate 2.1-1. The Partisol ambient air samplers are located at the top of a butte that is approximately 660 m north of the Doris camp. Doris Lake is shown in the background of this photograph.

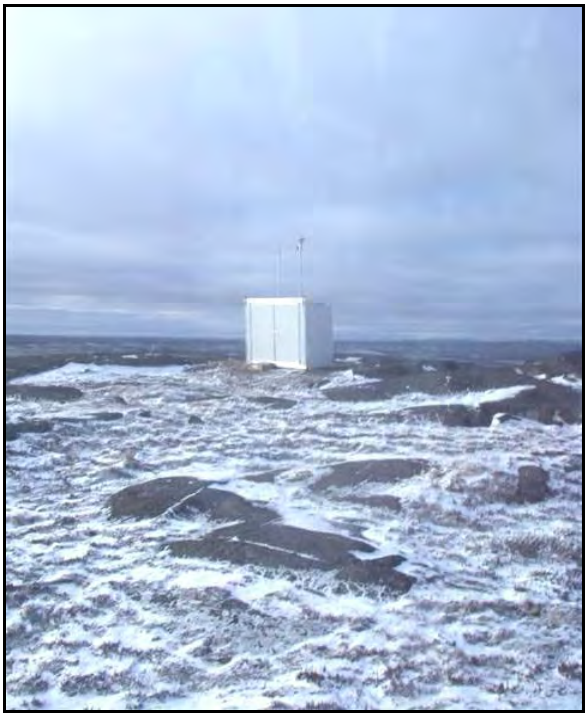


Plate 2.1-2. Temperature controlled shelter housing the Partisol ambient air samplers, late August 2009.

Plate 2.1-3. Inside the temperature controlled shelter the Partisol sampler for TSP is shown on the left and the PM10/PM2.5 sampler is on right.

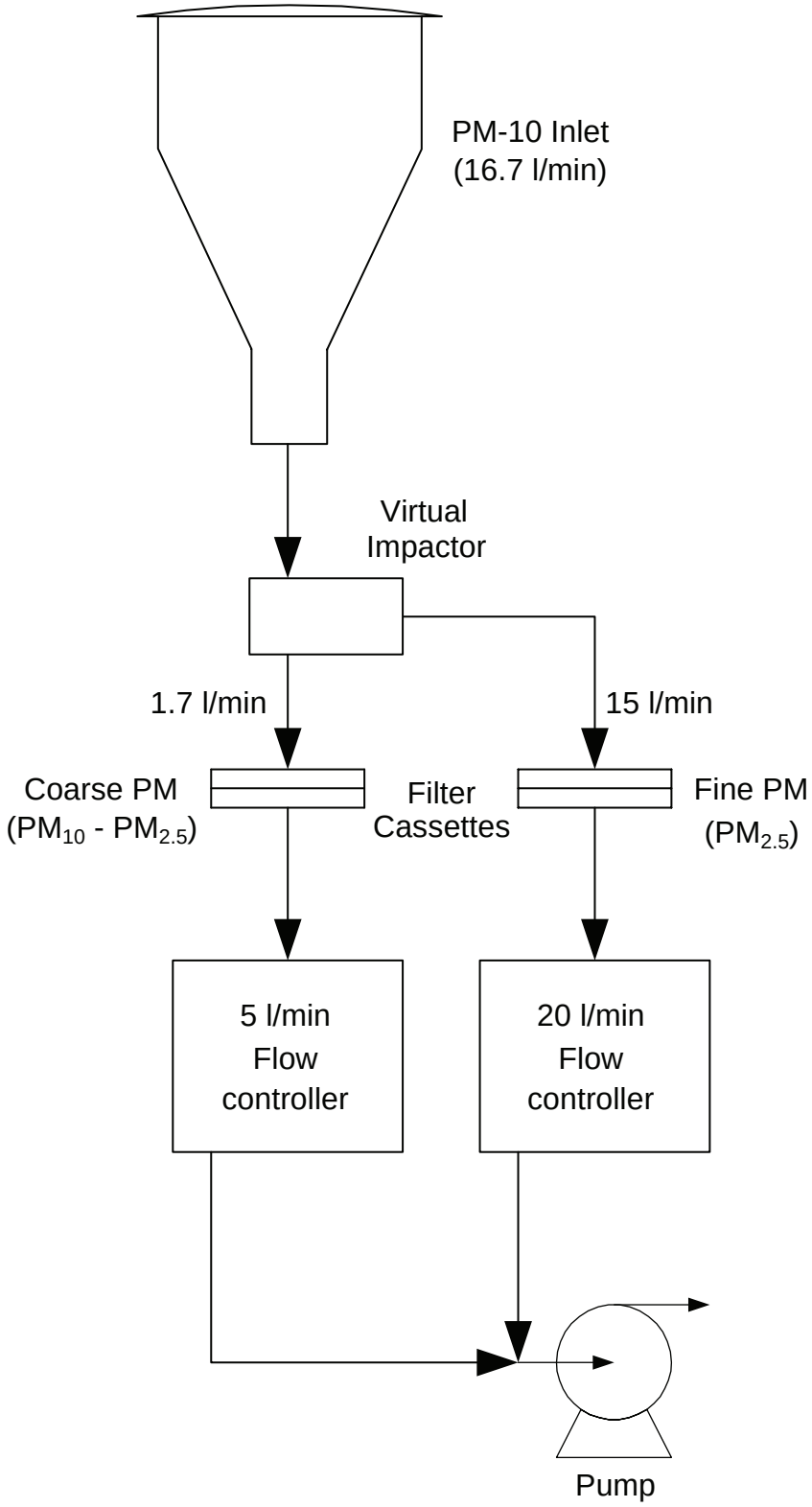
The filter exchange is performed using pneumatic pressure from the sample pump, and does not involve any special electromechanical components, belts or motors. New filter cassettes from the supply magazine (left) are pushed up and rightward to the sampling position, while the previous cassette is moved to the storage magazine (right, Plate 2.1-4). The supply and storage magazines are covered to seal off the filter cassettes thereby protecting them from environmental interferences during sampling operations.

The Partisol Plus 2025 TSP sampler (the instrument on left at Plate 2.1-3) monitors only TSP therefore, the instrument does not split the incoming ambient air and all sampling air goes through one filter.

The Partisol ambient air samplers at the Doris project are programmed to follow Environment Canada's National Air Pollution Surveillance (NAPS) schedule. The NAPS program requires 24-hour sampling every six days for particulate matter monitoring.

2.1.3 Results and Comparison

The ambient air quality sampling program for suspended particulate matter started on August 17, 2009. Table 2.1-1 summarizes the results from the Partisol 2025 Dichotomous sampler which provides ambient PM_{10} and $PM_{2.5}$ concentrations. The PM_{10} and $PM_{2.5}$ concentrations are representative of baseline conditions in an undisturbed remote area. There are no ambient air quality standards in Nunavut for PM_{10} and $PM_{2.5}$ therefore the Canada-Wide Standards were used to compare $PM_{2.5}$ and the British Columbia and Ontario standards for PM_{10}. The Canada-Wide Standards were created by the Canadian Council for Ministers of the Environment (CCME).



Source: Thermo Fisher Scientific, 2007

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Simplified Diagram for the Partisol Sequential Dichotomous Model 2025D Ambient Air Sampler

Figure 2.1-2

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Plate 2.1-4. The new Partisol air sampler filters are contained in a magazine on the left side of the unit. The filters laden with suspended particulate matter are contained in a magazine on the right side of the unit.

Table 2.1-1. PM_{10} and $PM_{2.5}$ Results Summary

Parameter	Units	24-hr Limit	17-Aug-09	23-Aug-09	29-Aug-09	04-Sep-09	10-Sep-09	16-Sep-09	22-Sep-09
PM_{10}	$\mu g/m^3$	50*	2.9	2.2	4.2	7.8	4.8	6.4	4.8
$PM_{2.5}$	$\mu g/m^3$	30**	1.6	1.4	2.2	3.5	2.9	4.1	2.8

** British Columbia and Ontario*
*** Canada-Wide Standard based on 98 percentile*

Since the program was recently initiated, there are only seven sampling results and therefore a definitive trend for particulate matter concentration cannot be discerned. The next 6 month reporting period will provide sufficient data to be able to determine if there is a trend of increasing, decreasing or steady particulate matter concentrations at the site.

Table 2.1-2 summarizes the results from the Partisol Plus 2025 sampler which monitors TSP concentrations. None of the 24 hour TSP concentrations exceeded the Health Canada - National Ambient Air Quality Objective (NAAQO) or the Nunavut Environmental Guideline for Air Quality. Overall, the results are lower than expected because the TSP concentrations should be higher than the PM_{10} and $PM_{2.5}$ concentrations. PM_{10} and $PM_{2.5}$ are subsets of TSP and the TSP sampler should be collecting all PM with an approximate aero dynamic diameter of 100 μm or less. The cause of these lower than normal TSP concentrations is currently being investigated.

Table 2.1-2. Total Suspended Particulate (TSP) Results Summary

Sampling Date			17-Aug-09	23-Aug-09	29-Aug-09	4-Sep-09	10-Sep-09	16-Sep-09	22-Sep-09
	Units	24-hr Limit							
TSP	$\mu g/m^3$	120*	1.6	1.8	2.3	1.8	1.2	1.2	0.9

** 24-hr limit specified in Canadian Ambient Air Quality Objective and the Nunavut Environmental Guideline for Air Quality*

2.2 DUSTFALL

The purpose of the dustfall monitoring program is to quantify the amount of dust deposition near to the Doris North project site and compare the results to the available criteria and standards.

Two dustfall monitoring stations began collecting data in March 2009. Three new dustfall monitoring stations were established early July 2009. The first two dustfall stations are collocated with meteorological stations at Doris and Boston. The dustfall results have been prorated by the laboratory to a 30-day average, so that they can be compared with the standards. The first two existing dustfall stations use an Alberta Environment method (Alberta AMD 1989), and the remaining three stations use the ASTM 2004 method.

2.2.1 Site Selection

The two existing dustfall monitoring stations are located at the Doris North and Boston automated meteorological stations. Three new dustfall stations were installed in the vicinity of Doris camp (Figure 2.2-1) following the ASTM 2004 site selection recommendations. The dominant wind directions as well as present and future project activities were considered during the site selection process. There are no obstructions or local sources of air pollutants near the new stations. In addition, the topography is very convenient to collect representative data (Figure 2.2-1). The dustfall monitoring stations are in open areas that are free of structures higher than 1 m within a 20 m radius of the collection container.

2.2.2 Monitoring Method

Dustfall (settleable particulate matter) was monitored at the three new dustfall monitoring stations by using the ASTM D1739-98 method (ASTM 2004). The dustfall monitoring stations collect particles small enough to pass through a 1 mm screen and large enough to settle by virtue of their weight.

This method requires containers of a standard size and shape which are sealed in a laboratory. The containers are opened and installed inside of a wind screen for about 30 days. Monthly samples were sent to the laboratory for analysis of total, soluble and insoluble particulate matter. There were two dustfall collectors at each new dustfall station. One of the containers measured particulates (total, soluble and insoluble) and anions (sulphate, nitrate, chloride, and ammonia) and the other measured total metals and various cations. Because algae are an interference for the dustfall measurement the deionized water in the dustfall containers also contains algaecide. The wind screen around the sample container improves the dustfall collection efficiency and bird spikes are used to minimize contaminants from bird droppings (Plate 2.2-1).

The two original dustfall stations were operated by using the Alberta Environment method (Alberta AMD 1989). Each station consisted of one dustfall collector. Monthly samples were sent to the laboratory for analysis of total dustfall and total fixed dustfall. Total dustfall is defined as the amount of material left after evaporation of a sample of dustfall and its subsequent drying. Total fixed dustfall is the residue that is left after ignition of the total dustfall sample (AMD 1989).

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Dustfall and Passive Air Quality Monitoring Stations

Figure 2.2-1

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Plate 2.2-1. Dustfall monitoring station three near the Doris project site. For locations using the ASTM (2004) method two sample containers are required to provide a sufficient volume of sample for the various parameters (e.g. particulate, anions, cations, total metals). Locations using the Alberta Environment (AMD 1989) method only require one collector.

2.2.3 Results and Comparison

The dustfall results and standards are summarized in Table 2.2-1 and Table 2.2-2, respectively. Table 2.2-3 summarizes the dustfall limits in various jurisdictions. There is no consistency in dustfall limits among various authorities and jurisdictions. Overall the Doris project dustfall results were lower than any of the limits listed in Table 2.2-3. This was expected and indicates typical baseline levels for an undisturbed area.

The concentration of total metals in the dustfall samples was also analyzed and the laboratory results are in Appendix III. The results indicate that most of the total metal concentrations were below the detection limit.

Table 2.2-1. Dustfall Results using the ASTM method (mg/dm^2/day)

Dustfall	DF1		DF2		DF3	
	Jul-2009	Aug-2009	Jul-2009	Aug-2009	Jul-2009	Aug-2009
Total	0.19	0.13	0.23	0.12	0.13	< DL
Total Insoluble	< DL	< DL	< DL	< DL	< DL	< DL
Total Soluble	0.15	0.13	0.19	0.13	0.12	0.11

Note : < DL = Less than the detection limit of 0.10 mg/dm^2/ day

Table 2.2-2. Dustfall Results using the Alberta Environment method (mg/dm²/day)

Doris Station	Mar-2009	Apr-2009	May-2009	Jun-2009	Jul-2009	Aug-2009	Sep-2009
Doris Total Dustfall	0.073	0.097	0.093	0.153	0.213	0.473	*
Doris Total Fixed Dustfall	0.023	0.073	0.023	0.100	0.190	0.437	*
Boston Station							
Boston Total Dustfall	0.123	0.160	0.137	0.190	0.160	0.467	0.227
Boston Total Fixed Dustfall	0.050	0.113	0.070	0.150	0.113	0.467	0.227

** Not available yet.*

Table 2.2-3. Dustfall Limits in Several Jurisdictions

Jurisdiction	**Dustfall Criterion Level (mg/m²/day)**	**Comments**	**Dustfall Criterion Level (mg/dm²/day)**
Alberta			
residential and recreational areas	175	averaged over 30 days	1.75
commercial and industrial areas	525	averaged over 30 days	5.25
Ontario	230	averaged over 30 days	2.3
Australia (new mines)	130	pro-rata compensation if level exceeded	1.3
	330	total compensation if level exceeded	3.3
United Kingdom			
open country	100	95th percentile - complaints likely if exceeded	1.0
residential areas	150	96th percentile - complaints likely if exceeded	1.5
commercial areas	190	97th percentile - complaints likely if exceeded	1.9
New York			
Level I	100		1.0
Level II	100		1.0
Level III	130		1.3
Level IV	200		2.0
British Columbia Pollution Control Objective (BC MOE 1979)	170 to 290		1.7 to 2.9

Source: Hrebenyk & Enns 2005 (except for the BC Pollution Control Objectives)

The total metal concentrations that were not below the detection limits were very low and for all intents and purposes would be considered negligible. There are no specific criteria for total metals in environmental dustfall. However, there is workplace or occupational air quality standards (e.g., industrial hygiene) for metals that are of concern with respect to human health. The metals that are a concern for human health are cadmium, lead and arsenic. The concentrations of total arsenic in the dustfall samples were below the detection limit in August but just above the limit of detection in July. The concentrations of total cadmium and lead in the dustfall samples were negligible.

3. Ambient Air Quality Monitoring by Passive Samplers

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3. Ambient Air Quality Monitoring by Passive Samplers

Starting in March 2009, the passive ambient air quality samplers obtained monthly average concentrations for criteria air contaminants at the Project site. Passive ambient air samplers were collocated with the Boston and Doris automated meteorological stations and monitored SO_2, NO_2 and O_3 (Figure 2.2-1).

3.1 SITE SELECTION

The samplers (Plate 3.1-1) were placed in environmentally safe locations where they would not be affected by weather or damaged by wildlife. They were placed far from obstructions and there were no nearby roadways that could influence measurements. One sampler was located near the Doris meteorological station (Figure 2.2-1) and the other was located near the Boston meteorological station.

Plate 3.1-1. The white circular device shown in this photo is the passive air sampling system near the Doris automated meteorological station.

3.2 MONITORING METHOD

Passive air sampling is a diffusive method which monitors gas or vapor pollutants from the atmosphere at a rate controlled by a physical process, such as diffusion through a static air layer or permeation through a membrane. The passive method does not involve the active movement of the air through the sampler; therefore no electric air moving pump is required. The number of days of contact between the ambient air and the permeation membrane is important. The local meteorological conditions are also used in the calculations. The meteorological parameters that are used in the PASS calculations are air temperature, wind speed and relative humidity.

The passive air monitoring sampling system (PASS) provides low detection limits, is very easy to install and does not require power. The passive sampler is kept under a rain shelter (Plate 3.2-1) on a tripod beside the Doris meteorological station. The other PASS monitoring site is located at the Boston meteorological station. Duplicate PASS samplers are collected at the Boston station.

Plate 3.2-1. Passive air samplers under a rain shelter.

3.3 RESULTS AND COMPARISON

Monthly PASS samples were analyzed at Maxxam Analytical Laboratory. The PASS results and standards are summarized in Table 3.3-1 and Table 3.3-2, respectively. The original laboratory reports are in Appendix II.

The PASS results are expressed as monthly average concentrations; however Health Canada's National Ambient Air Quality Objectives (NAAQO) and the Nunavut Environmental Guideline for Air Quality only use averaging periods of 1-hour, 24-hour and 1-year. Therefore the PASS results cannot be directly compared with the Canadian and Nunavut ambient air quality objectives or guidelines. After a full year of PASS data has been collected, it will be possible to compare with the annual limit in the NAAQO and Nunavut guidelines.

Overall the concentrations of SO_2, NO_2 and O_3 were low and representative of baseline concentrations in an undisturbed area.

Duplicate PASS samples are collected at the Boston station. During June 2009 there was a discrepancy between the two results for ozone. The ozone concentration for the first PASS sampler was 20.7 ppb but below the detection limit (0.1 ppb) for the second PASS sampler. The sample that was below the detectable limit was eliminated from the data set because 20.7 ppb is more representative of the baseline ozone concentrations at the Boston station.

Table 3.3-1. Passive Ambient Air Quality Monitoring Results

Doris Station Parameter	Sampling Period Units	Mar-2009	Apr-2009	May-2009	Jun-2009	Jul-2009	Aug-2009
SO_2	µg/m³	< DL	< DL	< DL	0.3	< DL	< DL
	ppb	< DL	< DL	< DL	0.1	< DL	< DL
NO_2	µg/m³	3.0	0.4	0.8	< DL	0.2	0.6
	ppb	1.6	0.2	0.4	< DL	0.1	0.3
O_3	µg/m³	1.4	60.2	79.6	55.9	40.6	39.4
	ppb	0.7	30.7	40.6	28.5	20.7	20.1
Boston Station[1,2] Parameter							
SO_2	µg/m³	0.2	< DL	< DL	< DL	< DL	< DL
	ppb	0.1	< DL	< DL	< DL	< DL	< DL
NO_2	µg/m³	0.2	5.6	1.9	0.2	< DL	0.6
	ppb	0.1	3.0	1.0	0.1	< DL	0.3
O_3	µg/m³	65.6	50.2	57.5	40.6	39.6	38.2
	ppb	33.5	25.6	29.3	20.7	20.2	19.5

< DL = Less than the detection Limit
Detection limits are (0.1 ppb) (0.26 ug/m³) for SO_2, 0.1 ppb (0.188 ug/m³) for NO_2 and 0.1 ppb (0.196 ug/m³) for O_3.
Note 1 = The average of two samples are presented in the Table 2.3-1 above.
Note 2 = If one of the samples below detection limit and the other sample is in detectable limit, the undetectable concentration was assumed as half of the detection limit (0.05 ppb) in average calculations.

Table 3.3-2. Ambient Air Quality Limits

	Unit	Annual	Daily	1-Hour
SO_2 *	µg/m³	30	150	450
NO_2 **	µg/m³	60	200	300
O_3 **	µg/m³	30	30	100

** Nunavut Environmental Guideline for Air Quality*
*** National Ambient Air Quality Objectives (NAAQOs) established and reviewed based on recommendations under the Canadian Environmental Protection Act (CEPA)*

Although direct comparisons cannot be made between the monthly PASS results and the NAAQO and Nunavut air quality guidelines due to the different averaging periods some general observations can be made.

The ozone concentrations at Doris and Boston were lower than the 1-hour NAAQO. They were also lower than the CCME - Canada-Wide Standard which has an 8-hour limit of 65 ppb (127 µg/m³) for the 4th highest value. However, Health Canada's National Ambient Air Quality Objectives (NAAQO) for

Ground-level Ozone suggests that the average background ozone concentrations are 25 to 40 ppb for a monthly average (Health Canada 1999). The ozone concentrations at the site ranged from 0.7 to 40.6 ppb and roughly one half of the ozone concentrations at Doris and Boston were lower than Health Canada's suggested range for background ground-level ozone concentrations. These observations are only based on 6 months of data collection and future data will add to the robustness of the data set and allow for a more accurate comparison.

4. Results and Discussions

4. Results and Discussion

The ambient air quality monitoring program at the Doris project site was substantially improved during the summer of 2009. The two previously installed passive ambient air monitoring and dustfall stations remained the same and three new dustfall stations were installed. In addition, two Partisol ambient air quality samplers were installed to monitor TSP, PM_{10} and $PM_{2.5}$.

The Partisol sampler and program follows the Environment Canada – National Air Pollutant Surveillance (NAPS) schedule and allows for collection of a 24-hr sample every six days. The Partisol program was initiated in mid August 2009 and there were seven results included in this report. The PM_{10} and $PM_{2.5}$ concentrations at the Doris site were typical of background concentrations for a remote undisturbed area in Canada and they were lower than the Health Canada – National Ambient Air Quality Objectives, Canada-Wide Standards and Nunavut Environmental Guideline for Air Quality. The total suspended particulate matter concentrations at the Doris site were lower than expected; therefore, the ambient air sampler with undergo an operational check. It is possible that a leak in the system may have caused the lower than normal concentrations. A second possible cause could be an error in the pre and post weighing of the Partisol air sampler filters at the analytical laboratory.

Three new dustfall stations were installed near the Doris site according to the ASTM 1739-98 method (reapproved in 2004). The two original dustfall stations used the 1985 Alberta Air Monitoring Directive Method. The monthly dustfall values were all below dustfall criteria in various jurisdictions. The maximum recorded dustfall concentration of 0.23 mg/dm^2/day (July 2009 at DF2) was below the Alberta limit (5.25 mg/dm^2/day) and British Columbia limit (1.7 to 2.3 mg/dm^2/day).

The passive ambient air quality monitoring program included monthly sampling for SO_2, NO_2 and O_3. The maximum observed concentrations were 0.1, 3.0 and 40.6 ppb for SO_2, NO_2 and O_3 respectively. The background concentrations were representative of a remote undisturbed area. Because of different averaging periods the PASS results (monthly average) cannot be directly compared with the Nunavut Environmental Guideline for Air Quality or Health Canada's National Ambient Air Quality Objectives – NAAQO (annual, 24-hour and 1-hour averages). Generally the monthly average ozone concentrations at the Doris site were in the range of background concentrations recommended by Health Canada, 1999 (25 to 40 ppb monthly average). Additional future data will provide for more useful comparisons to be made. After one year of PASS data has been collected it will be possible to calculate an annual average for direct comparisons with the Nunavut Guidelines and Health Canada's NAAQO.

The ambient air quality monitoring program at the Doris site will continue with the collection of TSP, PM_{10} and $PM_{2.5}$ samples for 24-hr every 6 days, and monthly dustfall monitoring and passive air sampling for SO_2, NO_2 and O_3.

References

Rescan™
Engineers and Scientists

References

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Appendix 1

Suspended Particulate Matter Results (TSP, PM10 and PM2.5)
Partisol Samplers

Rescan™
Engineers and Scientists

Maxxam Analytics

Site: HOPE BAY PROJECT

Attention: Tolga Olcay
RESCAN ENVIRONMENTAL SERVICES LTD.
SIXTH FLOOR
1111 WEST HASTINGS STREET
VANCOUVER, BC
CANADA V6E 2J3

Report Date: 2009/10/16

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A954794
Received: 2009/10/02, 11:09

Sample Matrix: Filter
Samples Received: 21

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Mass Determination(ug/filter)	21	N/A	2009/10/16		
Mass Determination (ug/m³) (1)	21	N/A	2009/10/16		
Volume	21	N/A	2009/10/16		

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) As per method, results are blank subtracted.

Encryption Key

Levi Manchak
16 Oct 2009 13:25:21 -06:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

LEVI MANCHAK,
Email:
Phone# (780) 378-8500

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For Service Group specific validation please refer to the Validation Signature Page

Total cover pages: 1

Maxxam Analytics

Maxxam Job #: A954794
Report Date: 2009/10/16

RESCAN ENVIRONMENTAL SERVICES LTD.

Site Reference: HOPE BAY PROJECT

RESULTS OF CHEMICAL ANALYSES OF FILTER

Maxxam ID		R04450	R04484	R04485	R04486	R04487		
Sampling Date		2009/08/17	2009/08/23	2009/08/29	2009/09/04	2009/09/10		
	Units	**DORIS - RP15486**	**DORIS - RP15277**	**DORIS - RP15480**	**DORIS - RP15576**	**DORIS - RP15550**	**RDL**	**QC Batch**
.								
Volume	m^3	2.50	2.50	2.50	2.50	2.50	0.01	3493771
PM2.5/10								
Particulate Matter	ug/m3	15	10	23	47	22	1	3493770
Particulate Matter	ug/filter	37	25	57	118	55	3	3493769

RDL = Reportable Detection Limit

Maxxam ID		R04488	R04489		R04490	R04491		
Sampling Date		2009/09/16	2009/09/22		2009/08/17	2009/08/23		
	Units	**DORIS - RP14323**	**DORIS - RP15109**	**RDL**	**DORIS - RP14351**	**DORIS - RP15545**	**RDL**	**QC Batch**
.								
Volume	m^3	2.50	2.50	0.01	22.70	22.80	0.01	3493771
PM2.5/10								
Particulate Matter	ug/m3	27	24	1	1.6	1.4	0.1	3493770
Particulate Matter	ug/filter	68	59	3	36	31	3	3493769

RDL = Reportable Detection Limit

Maxxam ID		R04492	R04493	R04494	R04495	R04496		
Sampling Date		2009/08/29	2009/09/04	2009/09/10	2009/09/16	2009/09/22		
	Units	**DORIS - RP14335**	**DORIS - RP14308**	**DORIS - RP13274**	**DORIS - RP14339**	**DORIS - RP14322**	**RDL**	**QC Batch**
.								
Volume	m^3	22.80	22.80	22.70	22.80	22.80	0.01	3493771
PM2.5/10								
Particulate Matter	ug/m3	2.2	3.5	2.9	4.1	2.8	0.1	3493770
Particulate Matter	ug/filter	50	79	66	93	63	3	3493769

RDL = Reportable Detection Limit

Maxxam Analytics

Maxxam Job #: A954794
Report Date: 2009/10/16

RESCAN ENVIRONMENTAL SERVICES LTD.

Site Reference: HOPE BAY PROJECT

RESULTS OF CHEMICAL ANALYSES OF FILTER

Maxxam ID		R04497	R04498	R04499	R04500	R04501		
Sampling Date		2009/08/17	2009/08/23	2009/08/29	2009/09/04	2009/09/10		
	Units	**DORIS - RP14314**	**DORIS - RP15549**	**DORIS - RP15479**	**DORIS - RP15072**	**DORIS - RP14087**	**RDL**	**QC Batch**
.								
Volume	m^3	25.40	25.40	25.40	25.40	25.40	0.01	3493771
PM2.5/10								
Particulate Matter	ug/m3	1.6	1.8	2.3	1.8	1.2	0.1	3493770
Particulate Matter	ug/filter	41	46	58	46	30	3	3493769

RDL = Reportable Detection Limit

Maxxam ID		R04502	R04504		
Sampling Date		2009/09/16	2009/09/22		
	Units	**DORIS - RP13102**	**DORIS - RP15114**	**RDL**	**QC Batch**
.					
Volume	m^3	25.40	25.40	0.01	3493771
PM2.5/10					
Particulate Matter	ug/m3	1.2	0.9	0.1	3493770
Particulate Matter	ug/filter	31	23	3	3493769

RDL = Reportable Detection Limit

General Comments

Results relate only to the items tested.

RESCAN ENVIRONMENTAL SERVICES LTD.
Attention: Tolga Olcay
Client Project #:
P.O. #:
Site Reference: HOPE BAY PROJECT

Quality Assurance Report

Maxxam Job Number: PA954794

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3493769	OZ	Calibration Check	Particulate Matter	2009/10/16		100	%	N/A

Calibration Check: A calibration standard analyzed at different times to evaluate on-going calibration accuracy.

Maxxam Analytics

Validation Signature Page

Maxxam Job #: A954794

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

LINDA LIN, Supervisor, Centre for Passive Sampling Technology

==========

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RESCAN ENVIRONMENTAL SERVICES LTD.

Maxxam Job #: A954794
Report Date: 2009/10/16

Client Project #:
Site Reference: HOPE BAY PROJECT
Sampler Initials:

RESULTS OF CHEMICAL ANALYSES OF FILTER

Maxxam ID		R04450	R04484	R04485	R04486	R04487	R04488	R04489		R04490	R04491	R04492
Sampling Date		17/08/2009	23/08/2009	29/08/2009	04/09/2009	10/09/2009	16/09/2009	22/09/2009		17/08/2009	23/08/2009	29/08/2009
	Units	**DORIS - RP15486**	**DORIS - RP15277**	**DORIS - RP15480**	**DORIS - RP15576**	**DORIS - RP15550**	**DORIS - RP14323**	**DORIS - RP15109**	**RDL**	**DORIS - RP14351**	**DORIS - RP15545**	**DORIS - RP14335**
.												
Volume	m^3	2.50	2.50	2.50	2.50	2.50	2.50	2.50	0.01	22.70	22.80	22.80
PM2.5/10												
Particulate Matter	ug/m3	15	10	23	47	22	27	24	1	1.6	1.4	2.2
Particulate Matter	ug/filter	37	25	57	118	55	68	59	3	36	31	50

RDL = Reportable Detection Limit
Results relate only to the items tested.

	17/08/2009	**8/23/2009**	**8/29/2009**	**9/4/2009**	**9/10/2009**	**9/16/2009**	**9/22/2009**
Coarse Sample ID	**RP15486**	**RP15277**	**RP15480**	**RP15576**	**RP15550**	**RP14323**	**RP15109**
Fine Sample ID	**RP04490**	**RP15545**	**RP14335**	**RP14308**	**RP13274**	**RP14329**	**RP14322**

Coarse Volume	(m3)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	0.01
Coarse PM	(ug/filter)	37	25	57	118	55	68	59	3
Fine Volume	(m3)	22.7	22.8	22.8	22.8	22.7	22.8	22.8	0.01
Fine PM	(ug/filter)	36	31	50	79	66	93	63	3
PM 2.5	(ug/m3)	1.59	1.36	2.19	3.46	2.91	4.08	2.76	
PM10 - PM2.5	(ug/m3)	1.31	0.85	2.04	4.32	1.89	2.28	2.06	
PM 10*	(ug/m3)	2.90	2.21	4.23	7.79	4.80	6.36	4.82	

*Calculations supplied by Tolga Olcay w/Rescan Environmental Services Ltd.

Appendix 2

Passive Ambient Air Quality Results

Rescan™
Engineers and Scientists

Maxxam Analytics

Your Project #: 2009/01/30 - 2009/03/01
Site: BOSTON CAMP/DORIS NORTH

Attention: CHRIS MADLAND
GOLDER ASSOCIATES LTD
#300 10525-170 ST.
EDMONTON, AB
CANADA T5P4W2

Report Date: 2009/04/03

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A912281
Received: 2009/03/19, 09:20

Sample Matrix: Air
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Determination of Dustfall	2	2009/03/27	2009/03/27		
Determination of Dustfall-mg/cm2/30 days	2	2009/03/27	2009/03/27		
Exposure (Number of days)	2	2009/03/27	2009/03/27		
NO2 Passive Analysis (1)	3	2009/03/24	2009/04/03		EDM SOP-0318
O3 Passive Analysis (1)	3	2009/03/27	2009/04/03		EDM SOP-0317
SO2 Passive Analysis (1)	3	2009/03/24	2009/04/03		EDM SOP-0319

(1) The detection limit is based on a 30 day sampling period.

Encryption Key

Levi Manchak
03 Apr 2009 15:55:57 -06:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

LEVI MANCHAK,
Email:
Phone# (780) 378-8500

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Total cover pages: 1

Maxxam Analytics

Maxxam Job #: A912281
Report Date: 2009/04/03

GOLDER ASSOCIATES LTD
Client Project #: 2009/01/30 - 2009/03/01
Site Reference: BOSTON CAMP/DORIS NORTH

Sample Details/Parameters	Result	RDL	Units	Extracted	Analyzed	By	Batch
O12345 09BOSTON-002							
Sampling Date 2009/02/01							
Matrix AIR							
RESULTS OF CHEMICAL ANALYSES OF AIR							
Passive Monitoring							
Calculated NO2	<0.1	0.1	ppb	2009/03/24	2009/04/03		3010592
Calculated O3	34.8	0.1	ppb	2009/03/27	2009/04/03		3019622
Calculated SO2	0.1	0.1	ppb	2009/03/24	2009/04/03		3010587
O12346 09BOSTON-002DUP							
Sampling Date 2009/02/01							
Matrix AIR							
RESULTS OF CHEMICAL ANALYSES OF AIR							
Passive Monitoring							
Calculated NO2	0.2	0.1	ppb	2009/03/24	2009/04/03		3010592
Calculated O3	32.1	0.1	ppb	2009/03/27	2009/04/03		3019622
Calculated SO2	<0.1	0.1	ppb	2009/03/24	2009/04/03		3010587
O12348 09BOSTONDF-002							
Sampling Date 2009/02/01							
Matrix AIR							
RESULTS OF CHEMICAL ANALYSES OF AIR							
Industrial							
Exposure	30	1	days	2009/03/27	2009/03/27		3019620
Dustfall Determination							
Total Dustfall	3	1	mg	2009/03/27	2009/03/27		3019617
Total Dustfall (30 day)	0.037	0.001	mg/cm2/30day	2009/03/27	2009/03/27		3019618
Total Fixed Dustfall	1	1	mg	2009/03/27	2009/03/27		3019617
Total Fixed Dustfall (30 day)	0.015	0.001	mg/cm2/30day	2009/03/27	2009/03/27		3019618
O12360 09DORIS-002							
Sampling Date 2009/01/30							
Matrix AIR							
RESULTS OF CHEMICAL ANALYSES OF AIR							
Passive Monitoring							
Calculated NO2	1.6	0.1	ppb	2009/03/24	2009/04/03		3010592
Calculated O3	0.7	0.1	ppb	2009/03/27	2009/04/03		3019622
Calculated SO2	<0.1	0.1	ppb	2009/03/24	2009/04/03		3010587
O12367 09DORISDF-002							
Sampling Date 2009/01/30							
Matrix AIR							
RESULTS OF CHEMICAL ANALYSES OF AIR							
Industrial							
Exposure	30	1	days	2009/03/27	2009/03/27		3019620
Dustfall Determination							
Total Dustfall	2	1	mg	2009/03/27	2009/03/27		3019617
Total Dustfall (30 day)	0.022	0.001	mg/cm2/30day	2009/03/27	2009/03/27		3019618
Total Fixed Dustfall	<1	1	mg	2009/03/27	2009/03/27		3019617
Total Fixed Dustfall (30 day)	0.007	0.001	mg/cm2/30day	2009/03/27	2009/03/27		3019618

General Comments

Results relate only to the items tested.

Maxxam Analytics

GOLDER ASSOCIATES LTD
Attention: CHRIS MADLAND
Client Project #: 2009/01/30 - 2009/03/01
P.O. #:
Site Reference: BOSTON CAMP/DORIS NORTH

Quality Assurance Report

Maxxam Job Number: PA912281

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3010587	DF4	Calibration Check	Calculated SO2	2009/03/24		101	%	95 - 105
		SPIKE	Calculated SO2	2009/03/24		101	%	N/A
		BLANK	Calculated SO2	2009/03/24	<0.1		ppb	
3010592	DF4	Calibration Check	Calculated NO2	2009/03/24		101	%	76 - 118
		SPIKE	Calculated NO2	2009/03/24		101	%	N/A
		BLANK	Calculated NO2	2009/03/24	<0.1		ppb	
3019617	OZ	Calibration Check	Total Dustfall	2009/03/27		96	%	N/A
		BLANK	Total Dustfall	2009/03/27	<1		mg	
		RPD [O12348-01]	Total Dustfall	2009/03/27	NC		%	N/A
			Total Fixed Dustfall	2009/03/27	NC		%	N/A
3019622	OZ	Calibration Check	Calculated O3	2009/03/27		98	%	91 - 107
		SPIKE	Calculated O3	2009/03/27		101	%	N/A
		BLANK	Calculated O3	2009/03/27	<0.1		ppb	

N/A = Not Applicable
NC = Non-calculable
RPD = Relative Percent Difference

Maxxam Analytics

Validation Signature Page

Maxxam Job #: A912281

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

LINDA LIN, Supervisor, Centre for Passive Sampling Technology

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Maxxam Analytics

Your Project #: 1009-002-02
Site: BOSTON CAMP/DORIS NORTH

Attention: DAN JARRATT
RESCAN ENVIRONMENTAL SERVICES LTD.
SIXTH FLOOR
1111 WEST HASTINGS STREET
VANCOUVER, BC
CANADA V6E 2J3

Report Date: 2009/06/03

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A924670
Received: 2009/05/26, 10:54

Sample Matrix: Air
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Determination of Dustfall	2	2009/06/01	2009/06/01		
Determination of Dustfall-mg/cm2/30 days	2	2009/06/01	2009/06/01		
Exposure (Number of days)	2	2009/06/01	2009/06/01		
NO2 Passive Analysis (1)	3	2009/06/01	2009/06/03		EDM SOP-0318
O3 Passive Analysis (1)	3	2009/06/01	2009/06/03		EDM SOP-0317
SO2 Passive Analysis (1)	3	2009/06/01	2009/06/03		EDM SOP-0319

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) The detection limit is based on a 30 day sampling period.

Encryption Key

Levi Manchak
04 Jun 2009 13:13:45 -06:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

LEVI MANCHAK,
Email:
Phone# (780) 378-8500

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Total cover pages: 1

Maxxam Analytics

Maxxam Job #: A924670
Report Date: 2009/06/03

RESCAN ENVIRONMENTAL SERVICES LTD.
Client Project #: 1009-002-02
Site Reference: BOSTON CAMP/DORIS NORTH

RESULTS OF CHEMICAL ANALYSES OF AIR

Maxxam ID		O92909	O92910	O92912		
Sampling Date		2009/03/30	2009/03/30	2009/03/30		
	Units	**09BOSTON-004**	**09BOSTON-004DUP**	**08BOSTONDF-004**	**RDL**	**QC Batch**
Industrial						
Exposure	days			32	1	3161202
Dustfall Determination						
Total Dustfall	mg			4	1	3161307
Total Dustfall (30 day)	mg/cm2/30day			0.048	0.001	3161308
Total Fixed Dustfall	mg			3	1	3161307
Total Fixed Dustfall (30 day)	mg/cm2/30day			0.034	0.001	3161308
Passive Monitoring						
Calculated NO2	ppb	3.2	2.8		0.1	3161311
Calculated O3	ppb	28.1	23.2		0.1	3161312
Calculated SO2	ppb	<0.1	<0.1		0.1	3161316

RDL = Reportable Detection Limit

Maxxam ID		O92913	O92914		
Sampling Date		2009/03/31	2009/03/31		
	Units	**09DORIS-004**	**09DORISDF-004**	**RDL**	**QC Batch**
Industrial					
Exposure	days		30	1	3161202
Dustfall Determination					
Total Dustfall	mg		2	1	3161307
Total Dustfall (30 day)	mg/cm2/30day		0.029	0.001	3161308
Total Fixed Dustfall	mg		2	1	3161307
Total Fixed Dustfall (30 day)	mg/cm2/30day		0.022	0.001	3161308
Passive Monitoring					
Calculated NO2	ppb	0.2		0.1	3161311
Calculated O3	ppb	30.7		0.1	3161312
Calculated SO2	ppb	<0.1		0.1	3161316

RDL = Reportable Detection Limit

General Comments

Sample names taken from sample labels due to chain of custody names corresponding to previous sample set names.

Results relate only to the items tested.

Maxxam Analytics

RESCAN ENVIRONMENTAL SERVICES LTD.
Attention: DAN JARRATT
Client Project #: 1009-002-02
P.O. #:
Site Reference: BOSTON CAMP/DORIS NORTH

Quality Assurance Report

Maxxam Job Number: PA924670

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3161307	OZ	Calibration Check	Total Dustfall	2009/06/01		98	%	N/A
		BLANK	Total Dustfall	2009/06/01	<1		mg	
			Total Fixed Dustfall	2009/06/01	<1		mg	
3161311	OZ	Calibration Check	Calculated NO2	2009/06/03		96	%	76 - 118
		SPIKE	Calculated NO2	2009/06/03		99	%	N/A
		BLANK	Calculated NO2	2009/06/03	<0.1		ppb	
3161312	OZ	Calibration Check	Calculated O3	2009/06/03		99	%	91 - 107
		SPIKE	Calculated O3	2009/06/03		100	%	N/A
		BLANK	Calculated O3	2009/06/03	<0.1		ppb	
3161316	OZ	Calibration Check	Calculated SO2	2009/06/03		100	%	95 - 105
		SPIKE	Calculated SO2	2009/06/03		98	%	N/A
		BLANK	Calculated SO2	2009/06/03	<0.1		ppb	

N/A = Not Applicable

Maxxam Analytics

Your Project #: 1009-002-02
Site: BOSTON CAMP/DORIS NORTH

Attention: DAN JARRATT
RESCAN ENVIRONMENTAL SERVICES LTD.
SIXTH FLOOR
1111 WEST HASTINGS STREET
VANCOUVER, BC
CANADA V6E 2J3

Report Date: 2009/07/23

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A934201
Received: 2009/07/06, 12:17

Sample Matrix: Air
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Determination of Dustfall	2	2009/07/20	2009/07/20		
Determination of Dustfall-mg/cm2/30 days	2	2009/07/20	2009/07/20		
Exposure (Number of days)	2	2009/07/07	2009/07/20		
NO2 Passive Analysis (1)	3	2009/07/16	2009/07/23		EDM SOP-0318
O3 Passive Analysis (1)	2	2009/07/10	2009/07/23		EDM SOP-0317
O3 Passive Analysis (1)	1	2009/07/15	2009/07/23		EDM SOP-0317
SO2 Passive Analysis (1)	3	2009/07/17	2009/07/23		EDM SOP-0319

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) The detection limit is based on a 30 day sampling period.

Encryption Key

Levi Manchak
23 Jul 2009 16:11:19 -06:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

LEVI MANCHAK,
Email:
Phone# (780) 378-8500

==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. SCC and CALA have approved this reporting process and electronic report format.

Total cover pages: 1

Maxxam Analytics

Maxxam Job #: A934201
Report Date: 2009/07/23

RESCAN ENVIRONMENTAL SERVICES LTD.
Client Project #: 1009-002-02
Site Reference: BOSTON CAMP/DORIS NORTH
Sampler Initials: JT

RESULTS OF CHEMICAL ANALYSES OF AIR

Maxxam ID		P64521	P64522	P64524		
Sampling Date		2009/06/02	2009/06/21	2009/06/02		
	Units	**09BOSTON-006**	**09BOSTON-006DUP**	**08BOSTONDF-006**	**RDL**	**QC Batch**
Industrial						
Exposure	days			26	1	3257502
Dustfall Determination						
Total Dustfall	mg			4	1	3285535
Total Dustfall (30 day)	mg/cm2/30day			0.057	0.001	3285536
Total Fixed Dustfall	mg			3	1	3285535
Total Fixed Dustfall (30 day)	mg/cm2/30day			0.045	0.001	3285536
Passive Monitoring						
Calculated NO2	ppb	<0.1	0.2		0.1	3278330
Calculated O3	ppb	20.7	<0.1		0.1	3264513
Calculated SO2	ppb	<0.1	<0.1		0.1	3280236

RDL = Reportable Detection Limit

Maxxam ID		P64525	P64526		
Sampling Date		2009/06/01	2009/06/01		
	Units	**09DORIS-006**	**09DORISDF-006**	**RDL**	**QC Batch**
Industrial					
Exposure	days		29	1	3257502
Dustfall Determination					
Total Dustfall	mg		4	1	3285535
Total Dustfall (30 day)	mg/cm2/30day		0.046	0.001	3285536
Total Fixed Dustfall	mg		2	1	3285535
Total Fixed Dustfall (30 day)	mg/cm2/30day		0.030	0.001	3285536
Passive Monitoring					
Calculated NO2	ppb	<0.1		0.1	3278330
Calculated O3	ppb	28.5		0.1	3275596
Calculated SO2	ppb	0.1		0.1	3280236

RDL = Reportable Detection Limit

Maxxam Analytics

Maxxam Job #: A934201
Report Date: 2009/07/23

RESCAN ENVIRONMENTAL SERVICES LTD.
Client Project #: 1009-002-02
Site Reference: BOSTON CAMP/DORIS NORTH
Sampler Initials: JT

General Comments

Sample P64522-01: Notes on field sheet state duplicate not deployed until 2009/06/21.

Results relate only to the items tested.

Maxxam Analytics

RESCAN ENVIRONMENTAL SERVICES LTD.
Attention: DAN JARRATT
Client Project #: 1009-002-02
P.O. #:
Site Reference: BOSTON CAMP/DORIS NORTH

Quality Assurance Report

Maxxam Job Number: PA934201

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3264513	OZ	Calibration Check	Calculated O3	2009/07/10		101	%	91 - 107
		SPIKE	Calculated O3	2009/07/10		96	%	N/A
		BLANK	Calculated O3	2009/07/10	<0.1		ppb	
3275596	OZ	Calibration Check	Calculated O3	2009/07/15		100	%	91 - 107
		SPIKE	Calculated O3	2009/07/15		102	%	N/A
		BLANK	Calculated O3	2009/07/15	<0.1		ppb	
3278330	DF4	Calibration Check	Calculated NO2	2009/07/16		99	%	76 - 118
		SPIKE	Calculated NO2	2009/07/16		100	%	N/A
		BLANK	Calculated NO2	2009/07/16	<0.1		ppb	
3280236	DF4	Calibration Check	Calculated SO2	2009/07/17		99	%	95 - 105
		SPIKE	Calculated SO2	2009/07/17		103	%	N/A
		BLANK	Calculated SO2	2009/07/17	<0.1		ppb	
3285535	OZ	Calibration Check	Total Dustfall	2009/07/20		94	%	N/A
		BLANK	Total Dustfall	2009/07/20	<1		mg	
			Total Fixed Dustfall	2009/07/20	<1		mg	
		RPD [P64524-01]	Total Dustfall	2009/07/20	NC		%	N/A
			Total Fixed Dustfall	2009/07/20	NC		%	N/A

N/A = Not Applicable
NC = Non-calculable
RPD = Relative Percent Difference

Maxxam Analytics

Your Project #: 1009-002-02
Site: BOSTON CAMP/DORIS NORTH

Attention: DAN JARRATT
RESCAN ENVIRONMENTAL SERVICES LTD.
SIXTH FLOOR
1111 WEST HASTINGS STREET
VANCOUVER, BC
CANADA V6E 2J3

Report Date: 2009/07/23

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A934204
Received: 2009/07/06, 12:28

Sample Matrix: Air
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Determination of Dustfall	2	2009/07/20	2009/07/20		
Determination of Dustfall-mg/cm2/30 days	2	2009/07/20	2009/07/20		
Exposure (Number of days)	2	2009/07/07	2009/07/20		
NO2 Passive Analysis (1)	3	2009/07/16	2009/07/23		EDM SOP-0318
O3 Passive Analysis (1)	3	2009/07/15	2009/07/23		EDM SOP-0317
SO2 Passive Analysis (1)	3	2009/07/17	2009/07/23		EDM SOP-0319

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) The detection limit is based on a 30 day sampling period.

Encryption Key

Levi Manchak
23 Jul 2009 16:10:25 -06:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

LEVI MANCHAK,
Email:
Phone# (780) 378-8500

==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. SCC and CALA have approved this reporting process and electronic report format.

Total cover pages: 1

Maxxam Analytics

Maxxam Job #: A934204
Report Date: 2009/07/23

RESCAN ENVIRONMENTAL SERVICES LTD.
Client Project #: 1009-002-02
Site Reference: BOSTON CAMP/DORIS NORTH
Sampler Initials: JT

RESULTS OF CHEMICAL ANALYSES OF AIR

Maxxam ID		P64566	P64567	P64569		
Sampling Date		2009/05/01	2009/05/01	2009/05/01		
	Units	**09BOSTON-005**	**09BOSTON-005DUP**	**08BOSTONDF-005**	**RDL**	**QC Batch**
Industrial						
Exposure	days			32	1	3257502
Dustfall Determination						
Total Dustfall	mg			4	1	3285545
Total Dustfall (30 day)	mg/cm2/30day			0.041	0.001	3285546
Total Fixed Dustfall	mg			2	1	3285545
Total Fixed Dustfall (30 day)	mg/cm2/30day			0.021	0.001	3285546
Passive Monitoring						
Calculated NO2	ppb	1.9	0.1		0.1	3278330
Calculated O3	ppb	29.3	6.7		0.1	3275596
Calculated SO2	ppb	<0.1	<0.1		0.1	3280236

RDL = Reportable Detection Limit

Maxxam ID		P64570	P64571		
Sampling Date		2009/04/30	2009/04/30		
	Units	**09DORIS-005**	**09DORISDF-005**	**RDL**	**QC Batch**
Industrial					
Exposure	days		32	1	3257502
Dustfall Determination					
Total Dustfall	mg		2	1	3285545
Total Dustfall (30 day)	mg/cm2/30day		0.028	0.001	3285546
Total Fixed Dustfall	mg		<1	1	3285545
Total Fixed Dustfall (30 day)	mg/cm2/30day		0.007	0.001	3285546
Passive Monitoring					
Calculated NO2	ppb	0.4		0.1	3278330
Calculated O3	ppb	40.6		0.1	3275596
Calculated SO2	ppb	<0.1		0.1	3280236

RDL = Reportable Detection Limit

Maxxam Analytics

Maxxam Job #: A934204
Report Date: 2009/07/23

RESCAN ENVIRONMENTAL SERVICES LTD.
Client Project #: 1009-002-02
Site Reference: BOSTON CAMP/DORIS NORTH
Sampler Initials: JT

General Comments

Sample P64567: Sample exposure began on June 21, 09. Noted on chain of custody.

Results relate only to the items tested.

Maxxam Analytics

RESCAN ENVIRONMENTAL SERVICES LTD.
Attention: DAN JARRATT
Client Project #: 1009-002-02
P.O. #:
Site Reference: BOSTON CAMP/DORIS NORTH

Quality Assurance Report

Maxxam Job Number: PA934204

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3275596 OZ	Calibration Check	Calculated O3	2009/07/15		100	%	91 - 107
	SPIKE	Calculated O3	2009/07/15		102	%	N/A
	BLANK	Calculated O3	2009/07/15	<0.1		ppb	
3278330 DF4	Calibration Check	Calculated NO2	2009/07/16		99	%	76 - 118
	SPIKE	Calculated NO2	2009/07/16		100	%	N/A
	BLANK	Calculated NO2	2009/07/16	<0.1		ppb	
3280236 DF4	Calibration Check	Calculated SO2	2009/07/17		99	%	95 - 105
	SPIKE	Calculated SO2	2009/07/17		103	%	N/A
	BLANK	Calculated SO2	2009/07/17	<0.1		ppb	
3285545 OZ	Calibration Check	Total Dustfall	2009/07/20		94	%	N/A
	BLANK	Total Dustfall	2009/07/20	<1		mg	
		Total Fixed Dustfall	2009/07/20	<1		mg	

N/A = Not Applicable

Maxxam Analytics International Corporation o/a Maxxam Analytics Edmonton: 9331 - 48th Street T6B 2R4 Telephone(780) 468-3500 FAX(780) 466-3332

Maxxam Analytics

Your Project #: 1009-002-02
Site: BOSTON CAMP/DORIS NORTH

Attention: DAN JARRATT
RESCAN ENVIRONMENTAL SERVICES LTD.
SIXTH FLOOR
1111 WEST HASTINGS STREET
VANCOUVER, BC
CANADA V6E 2J3

Report Date: 2009/08/21

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A942385
Received: 2009/08/12, 10:41

Sample Matrix: Air
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Determination of Dustfall	2	2009/08/20	2009/08/20		
Determination of Dustfall-mg/cm2/30 days	2	2009/08/20	2009/08/20		
Exposure (Number of days)	2	2009/08/15	2009/08/15		
NO2 Passive Analysis (1)	3	2009/08/20	2009/08/21		EDM SOP-0318
O3 Passive Analysis (1)	1	2009/08/13	2009/08/21		EDM SOP-0317
O3 Passive Analysis (1)	2	2009/08/20	2009/08/21		EDM SOP-0317
SO2 Passive Analysis (1)	3	2009/08/20	2009/08/21		EDM SOP-0319

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) The detection limit is based on a 30 day sampling period.

Encryption Key

Levi Manchak
21 Aug 2009 11:20:44 -06:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

LEVI MANCHAK,
Email:
Phone# (780) 378-8500

==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. SCC and CALA have approved this reporting process and electronic report format.

For Service Group specific validation please refer to the Validation Signature Page

Total cover pages: 1

Maxxam Analytics

Maxxam Job #: A942385
Report Date: 2009/08/21

RESCAN ENVIRONMENTAL SERVICES LTD.
Client Project #: 1009-002-02
Site Reference: BOSTON CAMP/DORIS NORTH
Sampler Initials: JT

RESULTS OF CHEMICAL ANALYSES OF AIR

Maxxam ID		Q20090	Q20091	Q20093		
Sampling Date		2009/06/28	2009/06/28	2009/06/28		
	Units	**09BOSTON-007**	**09BOSTON-007DUP**	**08BOSTONDF-007**	**RDL**	**QC Batch**
Industrial						
Exposure	days			32	1	3350333
Dustfall Determination						
Total Dustfall	mg			4	1	3361383
Total Dustfall (30 day)	mg/cm2/30day			0.048	0.001	3361384
Total Fixed Dustfall	mg			3	1	3361383
Total Fixed Dustfall (30 day)	mg/cm2/30day			0.034	0.001	3361384
Passive Monitoring						
Calculated NO2	ppb	<0.1	<0.1		0.1	3360357
Calculated O3	ppb	20.4	20.0		0.1	3360714
Calculated SO2	ppb	<0.1	<0.1		0.1	3360012

RDL = Reportable Detection Limit

Maxxam ID		Q20094	Q20095		
Sampling Date		2009/06/30	2009/06/30		
	Units	**09DORIS-007**	**09DORISDF-007**	**RDL**	**QC Batch**
Industrial					
Exposure	days		31	1	3350333
Dustfall Determination					
Total Dustfall	mg		5	1	3361383
Total Dustfall (30 day)	mg/cm2/30day		0.064	0.001	3361384
Total Fixed Dustfall	mg		5	1	3361383
Total Fixed Dustfall (30 day)	mg/cm2/30day		0.057	0.001	3361384
Passive Monitoring					
Calculated NO2	ppb	0.1		0.1	3360357
Calculated O3	ppb	20.7		0.1	3360714
Calculated SO2	ppb	<0.1		0.1	3360012

RDL = Reportable Detection Limit

Maxxam Analytics

Maxxam Job #: A942385
Report Date: 2009/08/21

RESCAN ENVIRONMENTAL SERVICES LTD.
Client Project #: 1009-002-02
Site Reference: BOSTON CAMP/DORIS NORTH
Sampler Initials: JT

General Comments

Sample Q20093-01: Field notes state 'No fluid left in container'

Sample Q20095-01: Field Notes state 'dustfall jar tilted over 45 degrees away from prevailing wind direction; most fluid evaporated'

Results relate only to the items tested.

Maxxam Analytics

RESCAN ENVIRONMENTAL SERVICES LTD.
Attention: DAN JARRATT
Client Project #: 1009-002-02
P.O. #:
Site Reference: BOSTON CAMP/DORIS NORTH

Quality Assurance Report

Maxxam Job Number: PA942385

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3360012 DF4	Calibration Check	Calculated SO2	2009/08/20		97	%	95 - 105
	Spiked Blank	Calculated SO2	2009/08/20		101	%	N/A
	Method Blank	Calculated SO2	2009/08/20	<0.1		ppb	
3360357 DF4	Calibration Check	Calculated NO2	2009/08/20		99	%	76 - 118
	Spiked Blank	Calculated NO2	2009/08/20		95	%	N/A
	Method Blank	Calculated NO2	2009/08/20	<0.1		ppb	
3360714 OZ	Calibration Check	Calculated O3	2009/08/20		98	%	91 - 107
	Spiked Blank	Calculated O3	2009/08/20		96	%	N/A
	Method Blank	Calculated O3	2009/08/20	<0.1		ppb	
3361383 OZ	Calibration Check	Total Dustfall	2009/08/20		98	%	N/A
	Method Blank	Total Dustfall	2009/08/20	<1		mg	
		Total Fixed Dustfall	2009/08/20	<1		mg	
	RPD [Q20093-01]	Total Dustfall	2009/08/20	NC		%	N/A
		Total Fixed Dustfall	2009/08/20	NC		%	N/A

N/A = Not Applicable
Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Calibration Check: A calibration standard analyzed at different times to evaluate on-going calibration accuracy.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

Maxxam Analytics

Validation Signature Page

Maxxam Job #: A942385

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

LINDA LIN, Supervisor, Centre for Passive Sampling Technology

==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. SCC and CALA have approved this reporting process and electronic report format.

Maxxam Analytics

Your Project #: 1009-002-02
Site: BOSTON CAMP/DORIS NORTH

Attention: DAN JARRATT
RESCAN ENVIRONMENTAL SERVICES LTD.
SIXTH FLOOR
1111 WEST HASTINGS STREET
VANCOUVER, BC
CANADA V6E 2J3

Report Date: 2009/10/30

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A960457
Received: 2009/10/26, 14:11

Sample Matrix: Air
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Determination of Dustfall	3	2009/10/29	2009/10/29		
Determination of Dustfall-mg/cm2/30 days	3	2009/10/29	2009/10/29		
Exposure (Number of days)	3	2009/10/29	2009/10/29		
NO2 Passive Analysis (1)	3	2009/10/29	2009/10/30		EDM SOP-0318
O3 Passive Analysis (1)	3	2009/10/28	2009/10/30		EDM SOP-0317
SO2 Passive Analysis (1)	3	2009/10/29	2009/10/30		EDM SOP-0319

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) The detection limit is based on a 30 day sampling period.

Encryption Key

Levi Manchak
30 Oct 2009 11:02:00 -06:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

LEVI MANCHAK,
Email:
Phone# (780) 378-8500

==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. SCC and CALA have approved this reporting process and electronic report format.

For Service Group specific validation please refer to the Validation Signature Page

Total cover pages: 1

Maxxam Analytics

Maxxam Job #: A960457
Report Date: 2009/10/30

RESCAN ENVIRONMENTAL SERVICES LTD.
Client Project #: 1009-002-02
Site Reference: BOSTON CAMP/DORIS NORTH
Sampler Initials: JT

RESULTS OF CHEMICAL ANALYSES OF AIR

Maxxam ID		R45415	R45416	R45418		
Sampling Date		2009/07/30	2009/07/30	2009/07/30		
	Units	**09BOSTON-008**	**09BOSTON-008DUP**	**08BOSTONDF-008**	**RDL**	**QC Batch**
Industrial						
Exposure	days			55	1	3525990
Dustfall Determination						
Total Dustfall	mg			10	1	3525987
Total Dustfall (30 day)	mg/cm2/30day			0.068	0.001	3525988
Total Fixed Dustfall	mg			10	1	3525987
Total Fixed Dustfall (30 day)	mg/cm2/30day			0.068	0.001	3525988
Passive Monitoring						
Calculated NO2	ppb	<0.1	0.2		0.1	3525899
Calculated O3	ppb	19.4	19.6		0.1	3521609
Calculated SO2	ppb	<0.1	<0.1		0.1	3525908

RDL = Reportable Detection Limit

Maxxam ID		R45419	R45421	R46854		
Sampling Date		2009/07/31	2009/07/31	2009/08/11		
	Units	**09DORIS-008**	**09DORISDF-008 JUL/AUG**	**09DORISDF-008 AUG/SEPT**	**RDL**	**QC Batch**
Industrial						
Exposure	days		11	42	1	3525990
Dustfall Determination						
Total Dustfall	mg		4	16	1	3525987
Total Dustfall (30 day)	mg/cm2/30day		0.140	0.142	0.001	3525988
Total Fixed Dustfall	mg		4	15	1	3525987
Total Fixed Dustfall (30 day)	mg/cm2/30day		0.140	0.131	0.001	3525988
Passive Monitoring						
Calculated NO2	ppb	0.3			0.1	3525899
Calculated O3	ppb	20.1			0.1	3521609
Calculated SO2	ppb	<0.1			0.1	3525908

RDL = Reportable Detection Limit

Maxxam Analytics

Maxxam Job #: A960457
Report Date: 2009/10/30

RESCAN ENVIRONMENTAL SERVICES LTD.
Client Project #: 1009-002-02
Site Reference: BOSTON CAMP/DORIS NORTH
Sampler Initials: JT

General Comments

Sample Exposure Dates:
O3/SO2/NO2 Doris-008: July 31/09 - Sept. 23/09
DUSTFALL Doris-008 JUL/AUG: July 31/09 - Aug. 11/09
DUSTFALL Doris-008 AUG/SEPT: Aug.11/09 - Sept. 22/09
O3/SO2/NO2 Boston-008: July 30/09 - Sept. 23/09
O3/SO2/NO2 Boston-DUP: July 30/09 - Sept. 23/09
DUSTFALL Boston-008: July 30/09 - Sept. 23/09

Results relate only to the items tested.

Maxxam Analytics

RESCAN ENVIRONMENTAL SERVICES LTD.
Attention: DAN JARRATT
Client Project #: 1009-002-02
P.O. #:
Site Reference: BOSTON CAMP/DORIS NORTH

Quality Assurance Report

Maxxam Job Number: PA960457

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3521609 OZ	Calibration Check	Calculated O3	2009/10/29		103	%	91 - 107
	Spiked Blank	Calculated O3	2009/10/29		100	%	N/A
	Method Blank	Calculated O3	2009/10/29	<0.1		ppb	
3525899 DF4	Calibration Check	Calculated NO2	2009/10/29		100	%	76 - 118
	Spiked Blank	Calculated NO2	2009/10/29		101	%	N/A
	Method Blank	Calculated NO2	2009/10/29	<0.1		ppb	
3525908 DF4	Calibration Check	Calculated SO2	2009/10/29		103	%	95 - 105
	Spiked Blank	Calculated SO2	2009/10/29		105	%	N/A
	Method Blank	Calculated SO2	2009/10/29	<0.1		ppb	
3525987 OZ	Calibration Check	Total Dustfall	2009/10/29		95	%	N/A
	Method Blank	Total Dustfall	2009/10/29	<1		mg	
		Total Fixed Dustfall	2009/10/29	<1		mg	
	RPD [R45418-01]	Total Dustfall	2009/10/29	0		%	N/A
		Total Fixed Dustfall	2009/10/29	0		%	N/A

N/A = Not Applicable
Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Calibration Check: A calibration standard analyzed at different times to evaluate on-going calibration accuracy.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Maxxam Analytics

Validation Signature Page

Maxxam Job #: A960457

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

LINDA LIN, Supervisor, Centre for Passive Sampling Technology

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. SCC and CALA have approved this reporting process and electronic report format.

GOLDER ASSOCIATES LTD

Maxxam Job #: A915450
Report Date: 2009/06/02

Client Project #: 2009/03/01 - 2009/03/31
Site Reference: BOSTON CAMP/DORIS NORTH
Sampler Initials:

RESULTS OF CHEMICAL ANALYSES OF AIR

Maxxam ID		O34379	O34380	O34382	O34383	O34384		
Sampling Date		03/01/2009	03/01/2009	03/01/2009	03/01/2009	03/01/2009		
	Units	**09BOSTON-003**	**09BOSTON-003DUP**	**08BOSTONDF-003**	**09DORIS-003**	**09DORISDF-003**	**RDL**	**QC Batch**
Industrial								
Exposure	days			29		30	1	3046854
Dustfall Determination								
Total Dustfall	mg			<1		<1	1	3064723
Total Dustfall (30 day)	mg/cm2/30day			0.009		0.007	0.001	3064724
Total Dustfall (day)	mg/100cm2/day			0.030	0	0.023	0.003	
Total Fixed Dustfall	mg			<1		<1	1	3064723
Total Fixed Dustfall (30 day)	mg/cm2/30day			<0.001		<0.001	0.001	3064724
Total Fixed Dustfall (day)	mg/100cm2/day			<0.003		<0.003	0.003	
Passive Monitoring								
Calculated NO2	ppb	4.0	4.1		1.0		0.1	3059013
Calculated O3	ppb	15.1	16.6		18.3		0.1	3064278
Calculated SO2	ppb	0.1	0.1		0.2		0.1	3051260

RDL = Reportable Detection Limit

Results relate only to the items tested.

RESCAN ENVIRONMENTAL SERVICES LTD.

Maxxam Job #: A924670
Report Date: 2009/06/03

Client Project #: 1009-002-02
Site Reference: BOSTON CAMP/DORIS NORTH
Sampler Initials:

RESULTS OF CHEMICAL ANALYSES OF AIR

Maxxam ID		O92909	O92910	O92912	O92913	O92914		
Sampling Date		03/30/2009	03/30/2009	03/30/2009	03/31/2009	03/31/2009		
	Units	**09BOSTON-004**	**09BOSTON-004DUP**	**08BOSTONDF-004**	**09DORIS-004**	**09DORISDF-004**	**RDL**	**QC Batch**
Industrial								
Exposure	days			32		30	1	3161202
Dustfall Determination								
Total Dustfall	mg			4		2	1	3161307
Total Dustfall (30 day)	mg/cm2/30day			0.048		0.029	0.001	3161308
Total Dustfall (day)	mg/100cm2/day			0.160		0.097	0.003	
Total Fixed Dustfall	mg			3		2	1	3161307
Total Fixed Dustfall (30 day)	mg/cm2/30day			0.034		0.022	0.001	3161308
Total Fixed Dustfall (day)	mg/100cm2/day			0.113		0.073	0.003	
Passive Monitoring								
Calculated NO2	ppb	3.2	2.8		0.2		0.1	3161311
Calculated O3	ppb	28.1	23.2		30.7		0.1	3161312
Calculated SO2	ppb	<0.1	<0.1		<0.1		0.1	3161316

RDL = Reportable Detection Limit

RESCAN ENVIRONMENTAL SERVICES LTD.

Maxxam Job #: A934204
Report Date: 2009/07/23

Client Project #: 1009-002-02
Site Reference: BOSTON CAMP/DORIS NORTH
Sampler Initials: JT

RESULTS OF CHEMICAL ANALYSES OF AIR

Maxxam ID		P64566	P64567	P64569	P64570	P64571		
Sampling Date		05/01/2009	05/01/2009	05/01/2009	04/30/2009	04/30/2009		
	Units	**09BOSTON-005**	**09BOSTON-005DUP**	**08BOSTONDF-005**	**09DORIS-005**	**09DORISDF-005**	**RDL**	**QC Batch**
Industrial								
Exposure	days			32		32	1	3257502
Dustfall Determination								
Total Dustfall	mg			4		2	1	3285545
Total Dustfall (30 day)	mg/cm2/30day			0.041		0.028	0.001	3285546
Total Dustfall (day)	mg/100cm2/day			0.137		0.093	0.003	
Total Fixed Dustfall	mg			2		<1	1	3285545
Total Fixed Dustfall (30 day)	mg/cm2/30day			0.021		0.007	0.001	3285546
Total Fixed Dustfall (day)	mg/100cm2/day			0.070		0.023	0.003	
Passive Monitoring								
Calculated NO2	ppb	1.9	0.1		0.4		0.1	3278330
Calculated O3	ppb	29.3	6.7		40.6		0.1	3275596
Calculated SO2	ppb	<0.1	<0.1		<0.1		0.1	3280236

RDL = Reportable Detection Limit

RESCAN ENVIRONMENTAL SERVICES LTD.

Maxxam Job #: A934201
Report Date: 2009/07/23

Client Project #: 1009-002-02
Site Reference: BOSTON CAMP/DORIS NORTH
Sampler Initials: JT

RESULTS OF CHEMICAL ANALYSES OF AIR

Maxxam ID		P64521	P64522	P64524		P64525	P64526		
Sampling Date		06/02/2009	06/21/2009	06/02/2009		06/01/2009	06/01/2009		
	Units	**09BOSTON-006**	**09BOSTON-006DUP**	**08BOSTONDF-006**	**QC Batch**	**09DORIS-006**	**09DORISDF-006**	**RDL**	**QC Batch**
Industrial									
Exposure	days			26	3257502		29	1	3257502
Dustfall Determination									
Total Dustfall	mg			4	3285535		4	1	3285535
Total Dustfall (30 day)	mg/cm2/30day			0.057	3285536		0.046	0.001	3285536
Total Dustfall (day)	mg/100cm2/day			0.190			0.153	0.003	
Total Fixed Dustfall	mg			3	3285535		2	1	3285535
Total Fixed Dustfall (30 day)	mg/cm2/30day			0.045	3285536		0.030	0.001	3285536
Total Fixed Dustfall (day)	mg/100cm2/day			0.150			0.100	0.003	
Passive Monitoring									
Calculated NO2	ppb	<0.1	0.2		3278330	<0.1		0.1	3278330
Calculated O3	ppb	20.7	<0.1		3264513	28.5		0.1	3275596
Calculated SO2	ppb	<0.1	<0.1		3280236	0.1		0.1	3280236

RDL = Reportable Detection Limit

RESCAN ENVIRONMENTAL SERVICES LTD.

Maxxam Job #: A942385
Report Date: 2009/08/21

Client Project #: 1009-002-02
Site Reference: BOSTON CAMP/DORIS NORTH
Sampler Initials: JT

RESULTS OF CHEMICAL ANALYSES OF AIR

Maxxam ID		Q20090	Q20091	Q20093	Q20094	Q20095		
Sampling Date		06/28/2009	06/28/2009	06/28/2009	06/30/2009	06/30/2009		
	Units	**09BOSTON-007**	**09BOSTON-007DUP**	**08BOSTONDF-007**	**09DORIS-007**	**09DORISDF-007**	**RDL**	**QC Batch**
Industrial								
Exposure	days			32		31	1	3350333
Dustfall Determination								
Total Dustfall	mg			4		5	1	3361383
Total Dustfall (30 day)	mg/cm2/30day			0.048		0.064	0.001	3361384
Total Dustfall (day)	mg/100cm2/day			0.160		0.213	0.003	
Total Fixed Dustfall	mg			3		5	1	3361383
Total Fixed Dustfall (30 day)	mg/cm2/30day			0.034		0.057	0.001	3361384
Total Fixed Dustfall (day)	mg/100cm2/day			0.113		0.190	0.003	
Passive Monitoring								
Calculated NO2	ppb	<0.1	<0.1		0.1		0.1	3360357
Calculated O3	ppb	20.4	20.0		20.7		0.1	3360714
Calculated SO2	ppb	<0.1	<0.1		<0.1		0.1	3360012

RDL = Reportable Detection Limit

RESCAN ENVIRONMENTAL SERVICES LTD.

Maxxam Job #: A960457
Report Date: 2009/10/30

Client Project #: 1009-002-02
Site Reference: BOSTON CAMP/DORIS NORTH
Sampler Initials: JT

RESULTS OF CHEMICAL ANALYSES OF AIR

Maxxam ID		R45415	R45416	R45418	R45419	R45421	R46854		
Sampling Date		07/30/2009	07/30/2009	07/30/2009	07/31/2009	07/31/2009	08/11/2009		
	Units	**09BOSTON-008**	**09BOSTON-008DUP**	**08BOSTONDF-008**	**09DORIS-008**	**09DORISDF-008 JUL/AUG**	**09DORISDF-008 AUG/SEPT**	**RDL**	**QC Batch**
Industrial									
Exposure	days			55		11	42	1	3525990
Dustfall Determination									
Total Dustfall	mg			10		4	16	1	3525987
Total Dustfall (30 day)	mg/cm2/30day			0.068		0.140	0.142	0.001	3525988
Total Dustfall (day)	mg/100cm2/day			0.227		0.467	0.473	0.003	
Total Fixed Dustfall	mg			10		4	15	1	3525987
Total Fixed Dustfall (30 day)	mg/cm2/30day			0.068		0.140	0.131	0.001	3525988
Total Fixed Dustfall (day)	mg/100cm2/day			0.227		0.467	0.437	0.003	
Passive Monitoring									
Calculated NO2	ppb	<0.1	0.2		0.3			0.1	3525899
Calculated O3	ppb	19.4	19.6		20.1			0.1	3521609
Calculated SO2	ppb	<0.1	<0.1		<0.1			0.1	3525908

RDL = Reportable Detection Limit

Appendix 3

Dustfall Analysis Results

Rescan™
Engineers and Scientists

Certificate of Analysis

RESCAN ENVIRONMENTAL SERVICES

ATTN: DAN JARRATT

SIXTH FLOOR
1111 WEST HASTINGS STREET
VANCOUVER BC V6E 2J3

Report Date: 14-SEP-09 15:09 (MT)
Version: FINAL

Lab Work Order #: L808988 **Date Received:** 21-AUG-09

Project P.O. #:
Job Reference: 1009-002-02
Legal Site Desc:
CofC Numbers:

Other Information:

Comments:

GLENYSS WEEKS
Technical Sales Representative

THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL WITHOUT THE WRITTEN AUTHORITY OF THE LABORATORY.
ALL SAMPLES WILL BE DISPOSED OF AFTER 30 DAYS FOLLOWING ANALYSIS. PLEASE CONTACT THE LAB IF YOU REQUIRE ADDITIONAL SAMPLE STORAGE TIME.

ALS LABORATORY GROUP ANALYTICAL REPORT

	Sample ID	L808988-1	L808988-2	L808988-3		
	Description					
	Sampled Date	10-AUG-09	10-AUG-09	10-AUG-09		
	Sampled Time	10:17	16:45	16:35		
	Client ID	DF-1 (JUL 6, 2009 - AUG 10, 2009)	DF-2 (JUL 6, 2009 - AUG 10, 2009)	DF-3 (JUL 6, 2009 - AUG 10, 2009)		
Grouping	**Analyte**					
DUSTFALL						
Particulates	Total Dustfall (mg/dm2.day)	0.19	0.23	0.13		
	Total Insoluble Dustfall (mg/dm2.day)	<0.10	<0.10	<0.10		
	Total Soluble Dustfall (mg/dm2.day)	0.15	0.19	0.12		
Anions and Nutrients	Ammonia as N (mg/dm2.day)	0.00088	0.00066	0.00084		
	Chloride (Cl) (mg/dm2.day)	0.0104	0.0135	0.0058		
	Nitrate (as N) (mg/dm2.day)	0.000846	0.000742	0.000707		
	Sulfate (SO4) (mg/dm2.day)	0.0068	0.0044	0.0041		
Metals	Aluminum (Al)-Total (mg/dm2.day)	0.000693	0.00113	0.000484		
	Antimony (Sb)-Total (mg/dm2.day)	<0.0000010	<0.0000010	0.0000013		
	Arsenic (As)-Total (mg/dm2.day)	<0.0000010	<0.0000010	<0.0000010		
	Barium (Ba)-Total (mg/dm2.day)	0.0000159	0.0000276	0.0000119		
	Beryllium (Be)-Total (mg/dm2.day)	<0.0000060	<0.0000060	<0.0000060		
	Bismuth (Bi)-Total (mg/dm2.day)	<0.0000060	<0.0000060	<0.0000060		
	Boron (B)-Total (mg/dm2.day)	<0.00010	<0.00010	<0.00010		
	Cadmium (Cd)-Total (mg/dm2.day)	0.00000198	0.00000199	0.00000494		
	Calcium (Ca)-Total (mg/dm2.day)	0.00290	0.00281	0.00178		
	Chromium (Cr)-Total (mg/dm2.day)	0.0000206	0.0000103	0.0000200		
	Cobalt (Co)-Total (mg/dm2.day)	<0.0000010	<0.0000010	<0.0000010		
	Copper (Cu)-Total (mg/dm2.day)	0.000158	0.000519	0.000283		
	Iron (Fe)-Total (mg/dm2.day)	0.00101	0.00139	0.00057		
	Lead (Pb)-Total (mg/dm2.day)	0.00000226	0.00000295	0.00000706		
	Lithium (Li)-Total (mg/dm2.day)	<0.000060	<0.000060	<0.000060		
	Magnesium (Mg)-Total (mg/dm2.day)	<0.0010	0.0017	<0.0010		
	Manganese (Mn)-Total (mg/dm2.day)	0.0000424	0.0000533	0.0000391		
	Mercury (Hg)-Total (mg/dm2.day)	<0.00000060	<0.00000060	<0.00000060		
	Molybdenum (Mo)-Total (mg/dm2.day)	<0.00000060	0.00000069	0.00000077		
	Nickel (Ni)-Total (mg/dm2.day)	0.0000071	0.0000102	0.0000186		
	Phosphorus (P)-Total (mg/dm2.day)	<0.0030	<0.0030	<0.0030		
	Potassium (K)-Total (mg/dm2.day)	<0.020	<0.020	<0.020		
	Selenium (Se)-Total (mg/dm2.day)	<0.000010	<0.000010	<0.000010		
	Silicon (Si)-Total (mg/dm2.day)	0.00152	0.00227	0.00129		
	Silver (Ag)-Total (mg/dm2.day)	<0.00000010	0.00000105	0.00000015		
	Sodium (Na)-Total (mg/dm2.day)	<0.020	<0.020	<0.020		
	Strontium (Sr)-Total (mg/dm2.day)	0.0000080	0.0000191	0.0000062		
	Thallium (Tl)-Total (mg/dm2.day)	<0.0000010	<0.0000010	<0.0000010		
	Tin (Sn)-Total (mg/dm2.day)	<0.0000010	<0.0000010	<0.0000010		
	Titanium (Ti)-Total (mg/dm2.day)	<0.00010	<0.00010	<0.00010		
	Uranium (U)-Total (mg/dm2.day)	0.00000016	0.00000012	<0.00000010		
	Vanadium (V)-Total (mg/dm2.day)	<0.000010	<0.000010	<0.000010		
	Zinc (Zn)-Total (mg/dm2.day)	0.000062	0.000140	0.000265		

Reference Information

Additional Comments for Sample Listed:

Samplenum	Matrix	Report Remarks	Sample Comments

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Analytical Method Reference(Based On)
CL-IC-VA	Dustfall	Dustfall Chloride by Ion Chromatography	BC LAB MAN. - PART. - SOLUBLE - ANIONS

The Dustfall analysis is carried out in accordance with the B.C. Laboratory Manual method 'Particulate - Total' and 'Particulate - Soluble - Anions and Cations by Ion Chromatography'. The chloride analysis is specifcially carried out using procedures adapted from APHA Method 4110 "Determination of Anions by Ion Chromatography" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

DUSTFALLS-COM-DM2-VA	Dustfall	Combined Dustfalls-Total, soluble, insol	BCMOE DUSTFALLS

Dustfall analysis is carried out in accordance with procedures published by the B.C. Ministry of Environment Laboratory.

HG-DUST(DM2-CVAFS-VA	Dustfall	Total Mercury in Dustfalls by CVAFS	EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry (EPA Method 245.7).

MET-DUST(DM2)-ICP-VA	Dustfall	Total Metals in Dustfalls by ICPOES	EPA 6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

MET-DUST(DM2)-MS-VA	Dustfall	Total Metals in Dustfalls by ICPMS	EPA 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).

NH3-COL-VA	Dustfall	Dustfall Ammonia by Colour	BC LAB MAN. - PART. - SOLUBLE - ANIONS

The Dustfall analysis is carried out in accordance with the B.C. Laboratory Manual method 'Particulate - Total' and 'Particulate - Soluble - Anions and Cations by Ion Chromatography'. The ammonia analysis is specifcially carried out using procedures adapted from APHA Method 4500-NH3 "Nitrogen Ammonia". Ammonia is determined using the phenate colourimetric method.

NO3-IC-VA	Dustfall	Dustfall Nitrate by Ion Chromatography	BC LAB MAN. - PART. - SOLUBLE - ANIONS

The Dustfall analysis is carried out in accordance with the B.C. Laboratory Manual method 'Particulate - Total' and 'Particulate - Soluble - Anions and Cations by Ion Chromatography'. The nitrate analysis is specifcially carried out using procedures adapted from APHA Method 4110 "Determination of Anions by Ion Chromatography" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

SO4-IC-VA	Dustfall	Dustfall Sulphate by Ion Chromatography	BC LAB MAN. - PART. - SOLUBLE - ANIONS

The Dustfall analysis is carried out in accordance with the B.C. Laboratory Manual method 'Particulate - Total' and 'Particulate - Soluble - Anions and Cations by Ion Chromatography'. The sulphate analysis is specifcially carried out using procedures adapted from APHA Method 4110 "Determination of Anions by Ion Chromatography" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

* Laboratory Methods employed follow in-house procedures, which are generally based on nationally or internationally accepted methodologies.
The last two letters of the above ALS Test Code column indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location	Laboratory Definition Code	Laboratory Location
VA	ALS LABORATORY GROUP - VANCOUVER, BC, CANADA		

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Analytical Method Reference(Based On)

LOSSARY OF REPORT TERMS
urr - A surrogate is an organic compound that is similar to the target analyte(s) in chemical composition and behavior but not normally detected in nviromental samples. Prior to sample processing, samples are fortified with one or more surrogate compounds.
he reported surrogate recovery value provides a measure of method efficiency.
g/kg (units) - unit of concentration based on mass, parts per million
g/L (units) - unit of concentration based on volume, parts per million
/A - Result not available. Refer to qualifier code and definition for explanation

est results reported relate only to the samples as received by the laboratory.
NLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
lthough test results are generated under strict QA/QC protocols, any unsigned test reports, faxes, or emails are considered preliminary.

LS Laboratory Group has an extensive QA/QC program where all analytical data reported is analyzed using approved referenced procedures followed by hecks and reviews by senior managers and quality assurance personnel. However, since the results are obtained from chemical measurements and thus annot be guaranteed, ALS Laboratory Group assumes no liability for the use or interpretation of the results.

Certificate of Analysis

RESCAN ENVIRONMENTAL SERVICES
ATTN: DAN JARRATT

SIXTH FLOOR
1111 WEST HASTINGS STREET
VANCOUVER BC V6E 2J3

Report Date: 14-SEP-09 15:09 (MT)
Version: FINAL

Lab Work Order #: **L808988** **Date Received:** **21-AUG-09**

Project P.O. #:
Job Reference: 1009-002-02
Legal Site Desc:
CofC Numbers:

Other Information:

Comments:

GLENYSS WEEKS
Technical Sales Representative

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ALL SAMPLES WILL BE DISPOSED OF AFTER 30 DAYS FOLLOWING ANALYSIS. PLEASE CONTACT THE LAB IF YOU REQUIRE ADDITIONAL SAMPLE STORAGE TIME.

ALS LABORATORY GROUP ANALYTICAL REPORT

	Sample ID	L808988-1	L808988-2	L808988-3		
	Description					
	Sampled Date	10-AUG-09	10-AUG-09	10-AUG-09		
	Sampled Time	10:17	16:45	16:35		
	Client ID	DF-1 (JUL 6, 2009 - AUG 10, 2009)	DF-2 (JUL 6, 2009 - AUG 10, 2009)	DF-3 (JUL 6, 2009 - AUG 10, 2009)		
Grouping	**Analyte**					
DUSTFALL						
Particulates	Total Dustfall (mg/dm2.day)	0.19	0.23	0.13		
	Total Insoluble Dustfall (mg/dm2.day)	<0.10	<0.10	<0.10		
	Total Soluble Dustfall (mg/dm2.day)	0.15	0.19	0.12		
Anions and Nutrients	Ammonia as N (mg/dm2.day)	0.00088	0.00066	0.00084		
	Chloride (Cl) (mg/dm2.day)	0.0104	0.0135	0.0058		
	Nitrate (as N) (mg/dm2.day)	0.000846	0.000742	0.000707		
	Sulfate (SO4) (mg/dm2.day)	0.0068	0.0044	0.0041		
Metals	Aluminum (Al)-Total (mg/dm2.day)	0.000693	0.00113	0.000484		
	Antimony (Sb)-Total (mg/dm2.day)	<0.0000010	<0.0000010	0.0000013		
	Arsenic (As)-Total (mg/dm2.day)	<0.0000010	<0.0000010	<0.0000010		
	Barium (Ba)-Total (mg/dm2.day)	0.0000159	0.0000276	0.0000119		
	Beryllium (Be)-Total (mg/dm2.day)	<0.0000060	<0.0000060	<0.0000060		
	Bismuth (Bi)-Total (mg/dm2.day)	<0.0000060	<0.0000060	<0.0000060		
	Boron (B)-Total (mg/dm2.day)	<0.00010	<0.00010	<0.00010		
	Cadmium (Cd)-Total (mg/dm2.day)	0.00000198	0.00000199	0.00000494		
	Calcium (Ca)-Total (mg/dm2.day)	0.00290	0.00281	0.00178		
	Chromium (Cr)-Total (mg/dm2.day)	0.0000206	0.0000103	0.0000200		
	Cobalt (Co)-Total (mg/dm2.day)	<0.0000010	<0.0000010	<0.0000010		
	Copper (Cu)-Total (mg/dm2.day)	0.000158	0.000519	0.000283		
	Iron (Fe)-Total (mg/dm2.day)	0.00101	0.00139	0.00057		
	Lead (Pb)-Total (mg/dm2.day)	0.00000226	0.00000295	0.00000706		
	Lithium (Li)-Total (mg/dm2.day)	<0.000060	<0.000060	<0.000060		
	Magnesium (Mg)-Total (mg/dm2.day)	<0.0010	0.0017	<0.0010		
	Manganese (Mn)-Total (mg/dm2.day)	0.0000424	0.0000533	0.0000391		
	Mercury (Hg)-Total (mg/dm2.day)	<0.00000060	<0.00000060	<0.00000060		
	Molybdenum (Mo)-Total (mg/dm2.day)	<0.00000060	0.00000069	0.00000077		
	Nickel (Ni)-Total (mg/dm2.day)	0.0000071	0.0000102	0.0000186		
	Phosphorus (P)-Total (mg/dm2.day)	<0.0030	<0.0030	<0.0030		
	Potassium (K)-Total (mg/dm2.day)	<0.020	<0.020	<0.020		
	Selenium (Se)-Total (mg/dm2.day)	<0.000010	<0.000010	<0.000010		
	Silicon (Si)-Total (mg/dm2.day)	0.00152	0.00227	0.00129		
	Silver (Ag)-Total (mg/dm2.day)	<0.00000010	0.00000105	0.00000015		
	Sodium (Na)-Total (mg/dm2.day)	<0.020	<0.020	<0.020		
	Strontium (Sr)-Total (mg/dm2.day)	0.0000080	0.0000191	0.0000062		
	Thallium (Tl)-Total (mg/dm2.day)	<0.0000010	<0.0000010	<0.0000010		
	Tin (Sn)-Total (mg/dm2.day)	<0.0000010	<0.0000010	<0.0000010		
	Titanium (Ti)-Total (mg/dm2.day)	<0.00010	<0.00010	<0.00010		
	Uranium (U)-Total (mg/dm2.day)	0.00000016	0.00000012	<0.00000010		
	Vanadium (V)-Total (mg/dm2.day)	<0.000010	<0.000010	<0.000010		
	Zinc (Zn)-Total (mg/dm2.day)	0.000062	0.000140	0.000265		

Reference Information

Additional Comments for Sample Listed:

Samplenum	Matrix	Report Remarks	Sample Comments

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Analytical Method Reference(Based On)
CL-IC-VA	Dustfall	Dustfall Chloride by Ion Chromatography	BC LAB MAN. - PART. - SOLUBLE - ANIONS

The Dustfall analysis is carried out in accordance with the B.C. Laboratory Manual method 'Particulate - Total' and 'Particulate - Soluble - Anions and Cations by Ion Chromatography'. The chloride analysis is specifcially carried out using procedures adapted from APHA Method 4110 "Determination of Anions by Ion Chromatography" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

DUSTFALLS-COM-DM2-VA	Dustfall	Combined Dustfalls-Total, soluble, insol	BCMOE DUSTFALLS

Dustfall analysis is carried out in accordance with procedures published by the B.C. Ministry of Environment Laboratory.

HG-DUST(DM2-CVAFS-VA	Dustfall	Total Mercury in Dustfalls by CVAFS	EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry (EPA Method 245.7).

MET-DUST(DM2)-ICP-VA	Dustfall	Total Metals in Dustfalls by ICPOES	EPA 6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

MET-DUST(DM2)-MS-VA	Dustfall	Total Metals in Dustfalls by ICPMS	EPA 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).

NH3-COL-VA	Dustfall	Dustfall Ammonia by Colour	BC LAB MAN. - PART. - SOLUBLE - ANIONS

The Dustfall analysis is carried out in accordance with the B.C. Laboratory Manual method 'Particulate - Total' and 'Particulate - Soluble - Anions and Cations by Ion Chromatography'. The ammonia analysis is specifcially carried out using procedures adapted from APHA Method 4500-NH3 "Nitrogen (Ammonia)". Ammonia is determined using the phenate colourimetric method.

NO3-IC-VA	Dustfall	Dustfall Nitrate by Ion Chromatography	BC LAB MAN. - PART. - SOLUBLE - ANIONS

The Dustfall analysis is carried out in accordance with the B.C. Laboratory Manual method 'Particulate - Total' and 'Particulate - Soluble - Anions and Cations by Ion Chromatography'. The nitrate analysis is specifcially carried out using procedures adapted from APHA Method 4110 "Determination of Anions by Ion Chromatography" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

SO4-IC-VA	Dustfall	Dustfall Sulphate by Ion Chromatography	BC LAB MAN. - PART. - SOLUBLE - ANIONS

The Dustfall analysis is carried out in accordance with the B.C. Laboratory Manual method 'Particulate - Total' and 'Particulate - Soluble - Anions and Cations by Ion Chromatography'. The sulphate analysis is specifcially carried out using procedures adapted from APHA Method 4110 "Determination of Anions by Ion Chromatography" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

Laboratory Methods employed follow in-house procedures, which are generally based on nationally or internationally accepted methodologies.
The last two letters of the above ALS Test Code column indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location	Laboratory Definition Code	Laboratory Location
VA	ALS LABORATORY GROUP - VANCOUVER, BC, CANADA		

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Analytical Method Reference(Based On)

LOSSARY OF REPORT TERMS
urr - A surrogate is an organic compound that is similar to the target analyte(s) in chemical composition and behavior but not normally detected in nvironmental samples. Prior to sample processing, samples are fortified with one or more surrogate compounds.
he reported surrogate recovery value provides a measure of method efficiency.
g/kg (units) - unit of concentration based on mass, parts per million
g/L (units) - unit of concentration based on volume, parts per million
/A - Result not available. Refer to qualifier code and definition for explanation

est results reported relate only to the samples as received by the laboratory.
NLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
lthough test results are generated under strict QA/QC protocols, any unsigned test reports, faxes, or emails are considered preliminary.

LS Laboratory Group has an extensive QA/QC program where all analytical data reported is analyzed using approved referenced procedures followed by hecks and reviews by senior managers and quality assurance personnel. However, since the results are obtained from chemical measurements and thus annot be guaranteed, ALS Laboratory Group assumes no liability for the use or interpretation of the results.

Appendix 4

Standard Operation Procedure for Partisol Ambient Air Quality Samplers

Rescan™
Engineers and Scientists

STANDARD OPERATING PROCEDURE (SOP) FOR HOPE BAY BELT PROJECT – BASELINE AMBIENT AIR QUALITY MONITORING FOR PARTICULATE MATTER (TSP, PM10 and PM2.5)

Project # 1009-002-02

Thermo 2025 D Sequential Dichotomous Partisol®-Plus

Thermo 2025 Partisol®-Plus

TABLE OF CONTENTS

1. FILTER HANDLING, EXCHANGE and SHIPPING 1-1
   - 1.1 Preparing the Filter Cassette Magazine 1-1
   - 1.2 Installing a Filter Cassette Magazine 1-1

2. SOFTWARE OVERVIEW 5
   - 2.1 Modes of Operation 5
   - 2.2 Basic Filter Setup Screen 6
   - 2.3 Operation After Power Failure 9

3. SECTION 3 - AUDIT 10
   - 3.1 Leak Check 10
   - 3.2 Flow Verification 11

List of Appendices

APPENDIX A Partisol Ambient Air Sampler Maintenance Record and Template for Calibration

APPENDIX B Environment Canada NAPS Schedule

APPENDIX C Example Chain of Custody for Maxaam Analytics

List of Plates

PLATE **PAGE**

Plate 1.1-1. Placing filter cassettes in a magazine. 1-1

Plate 1.2-1. Thermo Partisol 2025 TSP Sampler. 1-2

Plate 1.2-2. Transport Container (left) and placing the magazine (right). 1-2

Plate 1.2-3. Cassette serial numbers to be recorded and entered in the software. 1-3

Plate 1.2-4. The sampling inlets (TSP on left and PM10/PM2.5 on right) 1-3

Plate 2.1-1. Stand-by screen display 5

Plate 2.1-2. Partisol Keypad. 6

Plate 2.1-3. Filter information screen. 6

Plate 2.2-1A. 2025D Sequential Dichotomous ambient air quality sampler - Left side magazine loaded with new filters and right side magazine for used filters. The front magazines are for PM10 and the back magazines are for PM2.5. 7

Plate 2.2-1B Main Screen 7

Plate 2.2-2 The sample information screen (after <f3> filtsetup on main screen) 8

Plate 2.3-1. Thermo 2025 TSP Sampler. The left hand magazine contains new filters and the right hand magazine contains used filters. 9

Plate 3.1-1. Flow audit adapter. 10

Plate 3.2-1. Sample tube and the flow verifier. 11

1. FILTER HANDLING, EXCHANGE and SHIPPING

1.1 PREPARING THE FILTER CASSETTE MAGAZINE

Place the filters (in cassettes) coming from the laboratory into an empty magazine. These Teflon filters (47 mm diameter, Pull flex TX-40) were pre-weighted at the laboratory and placed in numbered cassettes. The metal part should be facing down when you are placing cassettes in the magazines. (Plate 1.1-1).

Plate 1.1-1. Placing filter cassettes in a magazine.

1.2 INSTALLING A FILTER CASSETTE MAGAZINE

There are 2 Thermo Scientific Partisol ambient air quality samplers for suspended particulate matter monitoring in the shelter. When you open the doors, the sampler on the left hand side is being used for total suspended particulate (TSP) sampling (Partisol Plus 2025 TSP Sampler) and the width of this sampler is relatively smaller than the other one and this width difference can be distinguished by eye. The instrument has one sampling compartment which uses two magazines (Plate 1.2-1). The left hand side will contain unused filter cassettes and the used filters will be stored on the right hand side.

Plate 1.2-1. Thermo Partisol 2025 TSP Sampler.

New filter cassettes are always placed in the left magazine, and the used filter cassettes in the right hand side magazine. Remove the tubing connected to the bottom of both magazines; the metal clip on the tubing should be pressed to unlock the connection. No tools are necessary for this change out.

Remove the existing magazines by pushing gently up and than moving counter clockwise until it releases itself and place the magazine, which contains used filters, in a transport container (Plate 1.2-2).

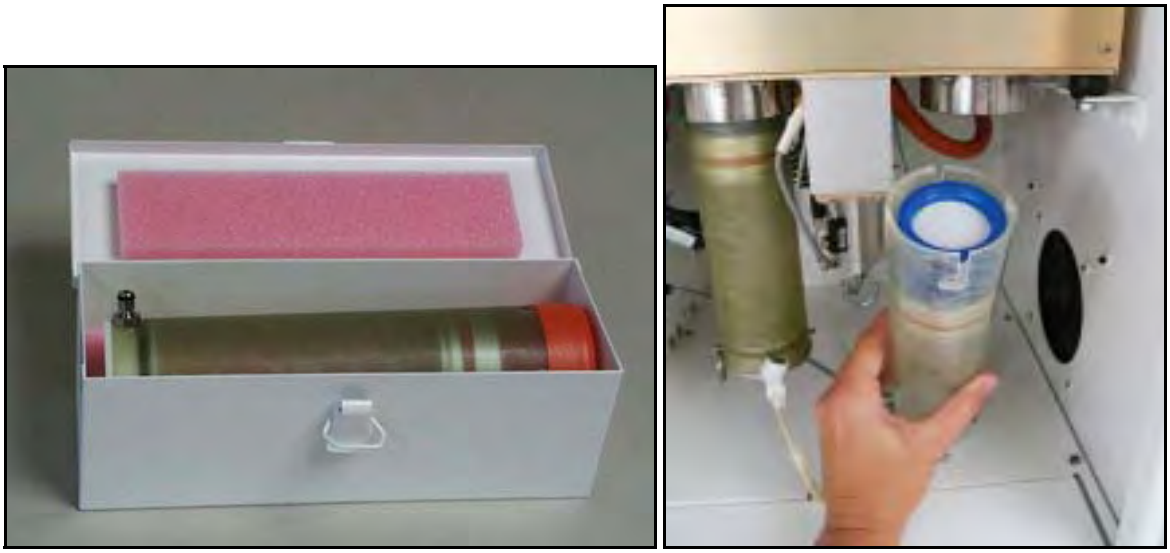

Plate 1.2-2. Transport Container (left) and placing the magazine (right).

After securing the samples (filter loaded cassettes) in transport container, install the new magazine (which contains the unused filter cassettes) by matching the notches in the filter cassette magazine with the mounting studs on the sampler. Push the magazine upward and rotate clockwise to lock it into place.

Ensure that the cassette magazines are labeled prior to installation in the sampler because there are different magazines that sample different types of particulate matter – for this sampler all samples are for total suspended particulate (TSP). Record the serial numbers of the cassettes (Plate 1.2-3) in the

order you placed them in the magazine. The filter numbers will be entered in the software program by using the LCD screen. Instructions for the software program are available below in Section 2.

Plate 1.2-3. Cassette serial numbers to be recorded and entered in the software.

The other Partisol ambient air quality sampler (Partisol PLUS Sequnetial Dichotomous Model #2025D) is located on the right hand side of the enclosure. This Partisol had 2 compartments because it samples both PM10 and PM2.5. These compartments have identical functionality with the Partisol 2025 TSP sampler. The difference is the PM10 inlet (Plate 1.2-4) at the end of the + 2 meter high sampling tubes above the roof of the outdoor enclosure.

Plate 1.2-4. The sampling inlets (TSP on left and PM10/PM2.5 on right).

Fill out the chain of custody with sampling date and volumes and send the filter cassettes in a weather proof hard case to;

Maxxam Analytics
Hope Bay Project (1009-002-02) – Partisol Filters
9331 - 48 Street, Edmonton, Alberta T6B 2R4
Tel: (780) 577-7100

2. SOFTWARE OVERVIEW

2.1 MODES OF OPERATION

Plate 2.1-1 summarizes the information displayed on the first "page" of the LCD screen. However, the flow rate will be 16.7 l/min for the Partisol 2025 TSP sampler and 15 / 1.67 l/min for the Sequential Dichotomous 2025D ($PM_{2.5}$/ PM_{10}) sampler. The mode will be "Wait" because this Project follows the NAPS (National Air Pollution Surveillance) schedule from Environment Canada. This means that the air samplers will work 24 hours every 6 days therefore if you don't visit during a 24-hr sampling period, you will always see the "wait" mode displayed.

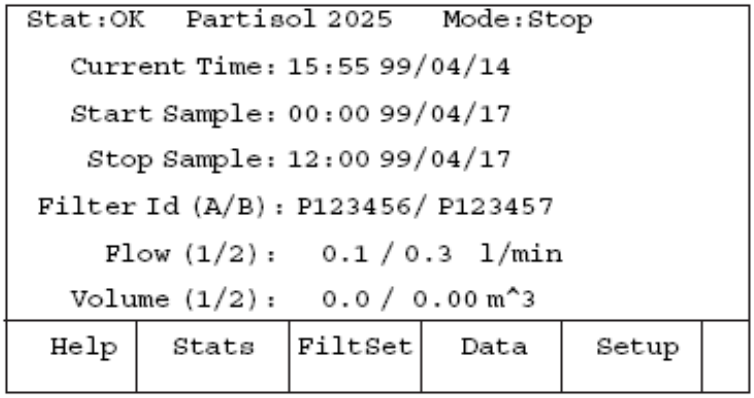

Plate 2.1-1. Stand-by screen display.

Navigating among screens is done using the keypad. In order to edit, you should switch to "Stop" mode from "Wait" mode, which is displayed on top right corner of the screen, by using run/stop button on the left bottom button on the keypad (Plate 2.1-2). Since the software is already programmed, the user will only use the instrument to enter filter names. Always remember to swith "wait" mode by pressing lower-left button (Run/Stop) before leaving the shelter, otherwise the system will not operate and partisol sampler will be on standby mode.

Once samples are collected in the right hand side filter magazine, make sure to fill in the data sheet in Appendix A and send it to the laboratory with the samples and the chain of custody. To determine the actual total volume of air sampled (m^3) press <F4> Data and then press "filter data screen".

Plate 2.1-3 summarizes the sampling data for filter "P 123456" with an actual sampled volume of 6 m^3 on Apr 11, 1999. This information is to be filled in Appendix A form for laboratory calculations.

The filters will be weighted at the accredited laboratory (Section 1.2), and the actual volume of air sampled will enable the laboratory staff to calculate the mass concentration of particulate matter in ambient air.

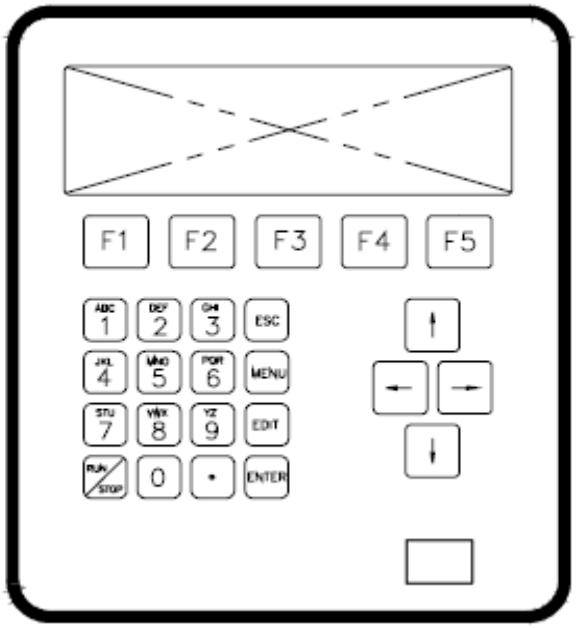

Plate 2.1-2. Partisol Keypad.

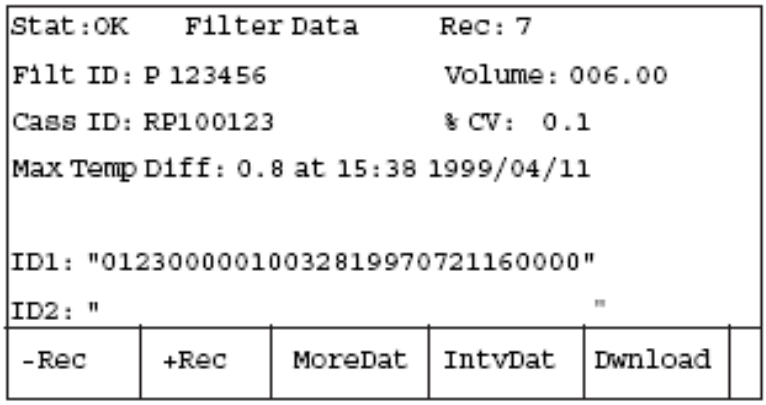

Plate 2.1-3. Filter information screen.

2.2 BASIC FILTER SETUP SCREEN

The Partisol ambient air quality sampling schedule is synchronized with Environment Canada NAPS. The 2009 NAPS schedule is provided in Appendix B.

NAPS requires 24-hour sampling every 6 days. This sample frequency is already programmed in both Partisols therefore no further programming is necessary. The memory keeps the sampling program even there is a power failure.

After removing the magazine full of used filters and installing a magazine of new filters (Plate 2.2-1), the new filter numbers should be entered on the field data sheet (Appendix A) in order to get statistical data in the future, such as actual total volume of air sampled.

Plate 2.2-1A. 2025D Sequential Dichotomous ambient air quality sampler - Left side magazine loaded with new filters and right side magazine for used filters. The front magazines are for PM10 and the back magazines are for PM2.5.

To enter filter names (numbers), press setup <F5> on the main screen (Plate 2.2-1B). (If you think you're not on the main screen, please press ESC button until you reach the main screen).

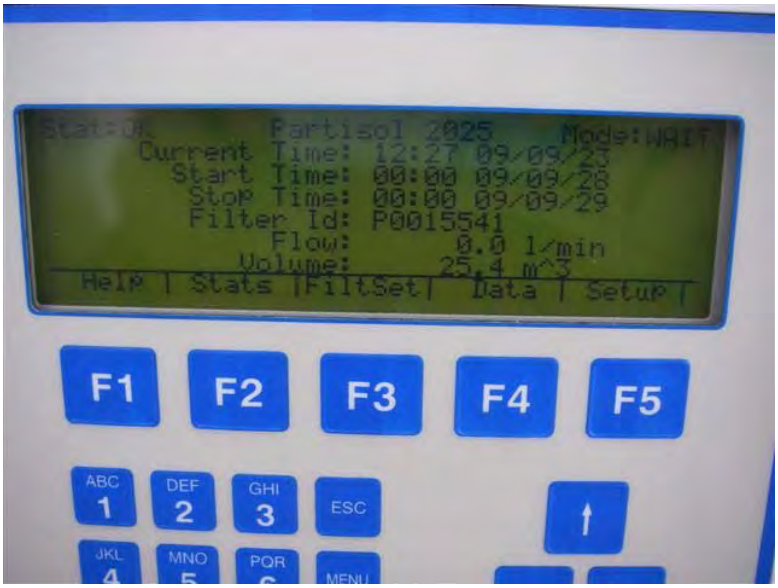

Plate 2.2-1B Main Screen

Then select the filter list setup screen, you will see a list to be edited. Press the edit button and enter the name (number) of new filters in order. Remember that last filter you put in the magazine will be number 1 in this list.

You should also remind that front magazines are for coarse particulates (PM10 minus PM2.5) and rear magazines are for fine particulates (PM2.5). The same types of filters are used for both the PM10 and PM2.5 sampling. The only important point is to record which ones were at the rear (PM2.5) and at the front (PM10) in the form at Appendix A. Make sure you know the order of filters installed in magazine so if you made a mistake entering a filter name, data can be gathered by using date and time data. The easiest way of gathering data is to take pictures of records on the screen (Plate 2.2-2). As it is seen on Plate 2.2-2, the 6th filter in the magazine was sampled on September 22, 2009 with a total volume of 25.4 m^3.

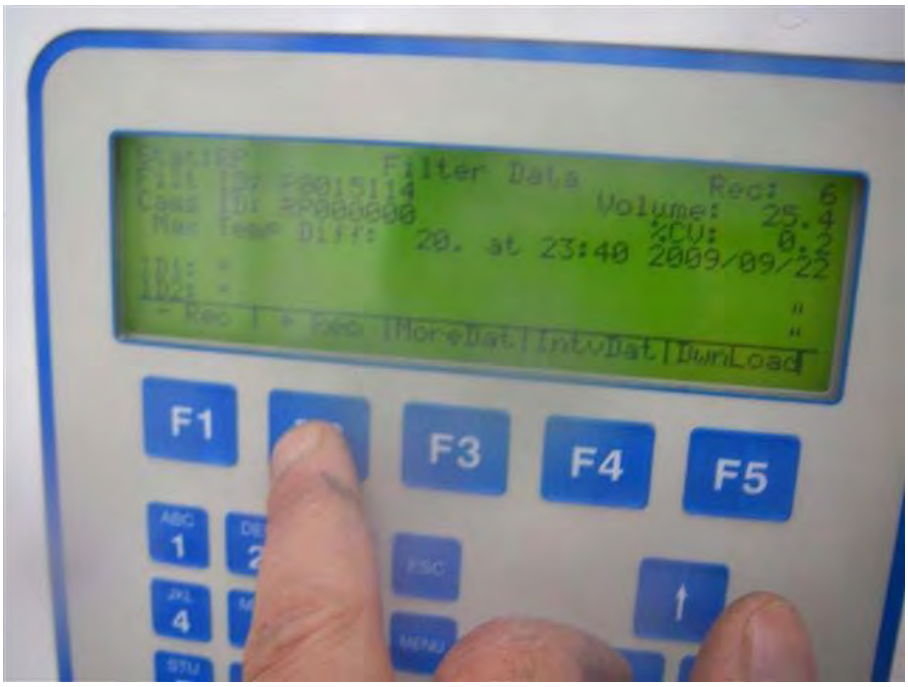

Plate 2.2-2 The sample information screen (after <f3> filtsetup on main screen)

The TSP model 2025 Partisol PLUS sampler has only one compartment (Plate 2.3-1). Both Partisol samplers have the same system for organizing the filters in the left magazine contains new filters and right magazine contains (or will contain) used filters.

As a summary, the operation needs attention to 2 important factors.
1. Taking the used filters with their sampling date and total volume.
2. Installing new filters and recording their filter names in order

Your shelter visit will be step by step as the following;
- Never visit the shelter during an operation day (NAPS scheduled) because the sampler is running.
- Take the used filters and write down on the magazine their compartment (TSP, Coarse-PM10 or Fine-PM2.5).
- Take pictures of the sampling records (see example as in Plate 2.2-2)
- Install new magazines and don't forget to hook up air pumping tubing.
- Press <Run/Stop> button on left bottom corner of the keypad, and than once you see "Stop" on right top corner of the LCD screen, enter filter names. And than make sure pressing <Run/Stop> button and see "Wait" mode on the screen before you leave.

2.3 OPERATION AFTER POWER FAILURE

In the event of a power failure settings are not changed, the operation will continue when power comes back. The system lots a "Z" condition to mark the power failure. Depending upon how much time has passed, the unit will perform a filter exchange until it reaches the next filter scheduled to sample. It then either begins sampling or enters the Wait Operating Mode to await the start of the next sequential sample. If the unit begins sampling, the "Z" status condition will be retained in the current record of filter data. However, if the unit enters the Wait Operating Mode, the unit will automatically clear the "Z" status condition.

Therefore, the operator does not need to make any special programming changes but has to record the power failure date and time in the form in Appendix A.

Plate 2.3-1. Thermo 2025 TSP Sampler. The left hand magazine contains new filters and the right hand magazine contains used filters.

3. SECTION 3 - AUDIT

Because these parameters determine the flow rate used to calculate the TSP, PM10 and PM2.5 concentrations, a leak check, flow verification and temperature check should be performed periodically.

3.1 LEAK CHECK

To determine if there are any air leaks, a filter cassette containing a new 47 mm filter must be installed in the sampling position of the sampler. Then the following procedures should be followed:

1. Attach the flow audit adapter to the sample tube and close the valve on the flow audit adapter (Plate 3.1-1).

Plate 3.1-1. Flow audit adapter.

2. While in the Audit screen, press LeakChk <F5> to display the Leak Check screen. Press <F2> Start, and follow the instructions displayed on the screen.
3. A "Pass" or "Fail" message will display at the end of the leak check cycle. A pressure drop of 25 mm Hg or less is the Partisol air sampler's leak check pass criteria.
4. If a "Fail" message is displayed, insert a new 47 mm filter into a filter cassette and place it in the topmost position of the audit magazine. Usually previously used cassettes may cause a leak problems because of damages caused during opening and closing. Make sure the cassettes are tightened properly. Press <F4: FiltAdv> to move the new filter into sampling position. Repeat the leak check procedure.
5. If a "Fail" message is again displayed, perform the troubleshooting procedures detailed in the Service Manual.

6. If a "Pass" message is displayed, slowly open the valve on the flow audit adapter. Record the leak check results on the calibration and maintenance record (Appendix A).
7. Remove the flow audit adapter from the sample tube.

3.2 FLOW VERIFICATION

A leak test and temperature check should be done before verification of air flow. The ambient air temperature readings should be ± 2 °C of the Partisols readings.

1. Remove the 2 m extension tube, and place the short sampling tube (Plate 3.2-1). A Streamline FTS Flow Transfer Standard is used for verification. If necessary, remove the flow audit adapter (Plate 11) and install the FTS on the sample tube (Plate 3.2-1).
2. Press <F5: Audit> to enter the Audit screen. Confirm that 15.0 l/min and 1.67 l/min are the set flows in the Set Flow field. Press <F2: Valve 1> and then <F1: Pump>. Wait for the flow rate displayed in the Cur Flow column to stabilize.
3. If using the FTS, press <EDIT>, enter the pressure drop (inches H2O) from the Digital Manometer display, and then press <ENTER>. The sampler will calculate and display the FTS volumetric air flow rate. Follow steps 4a) to 7a) below for the Sequential Dichotomous 2025D air sampler. Follow steps 4b) to 6b) below for the Partisol PLUS 2025 ambient air sampler.

Plate 3.2-1. Sample tube and the flow verifier.

If you are auditing the Sequential Dichotomous 2025D sampler:

- When using the flow audit adapter, ensure that the first variable in the Cur Flow field is close to 15.0 l/min. The measured flow should be within ± 5% of the displayed Cur Flow.
- Press <F3: Valve 2> and <F1: Pump>. Wait for the flow rate displayed in the Cur Flow column to stabilize.
- If using the FTS, press <EDIT>, enter the pressure drop (inches H2O) from the Digital Manometer display, and then press <ENTER>. The sampler will calculate and display the FTS volumetric flow.

- When using the flow audit adapter, ensure that the second variable in the Cur Flow field is close to 1.67 l/min. The measured flow should be within ± 5% of the displayed Cur Flow. If this is not the case, perform the flow rate calibration procedure described in the Service Manual. Press <F1: Pump> and <F3: Valve 2> to turn off the pump. Record the results of the flow verification on the maintenance/calibration data sheet (Appendix A).

<u>If you are auditing the Partisol PLUS 2025 (TSP) sampler:</u>

- When using the flow audit adapter, ensure that the first variable in the Cur Flow field is close to 16.7 l/min. The measured flow should be within ± 5% of the displayed Cur Flow.
- Press <F3: Valve 2> and <F1: Pump>. Wait for the flow rate displayed in the Cur Flow column to stabilize.
- When using the FTS, press <EDIT>, enter the pressure drop (inches H2O) from the Digital Manometer display, and then press <ENTER>. The sampler will calculate and display the FTS volumetric flow. Record the results of the flow verification on the maintenance/calibration data sheet (Appendix A).

Appendix A

Thermo Partisol Ambient Air Sampler Calibration Record
Hope Bay Belt Project, Nunavut (#1009-002-02)

Date : _____
Time : _____
Personnel(s) : _____

Temperature (°C) at weather station : _____
Barometric Pressure (kPa) at weather station : _____

Circle One : Partisol 2025D Sequential Dichotomous Air Sampler S/N 99-004728-0120
Partisol 2025 Partisol Plus Air Sampler S/N 99-004724-0120

MAIN MENU	
Partisol Sampler Date (YY-MMM-DD)	:
Partisol Sampler Time (0.00 – 24.00)	:
Status (normal value is "OK")	:
Is it in "RUN" mode? (top right hand corner of screen)	: Y / N
Next Sampling Date (DD-MMM) (right hand side of screen under the column "Date")	:

AUDIT SCREEN	
Ambient Temperature (°C)	:
Ambient Pressure (atm.)	:
* The difference between these two readings should not be below half the value of #1 * To convert kPa to atm, multiply by 0.009869. Ambient Press must be within +/-0.02 atm.	

LEAK TEST	
1. Vacuum gauge reading with flow control value closed. (Inch/Hg)	:
2. Vacuum gauge reading with both flow control manual valve and pump manual value (Inch/Hg)	:
* The difference between these two readings should not be below half the value of #1	

FLOW AUDIT	
– Streamline FTS S/N	: 57-004506-0001
– Streamline FTS calibration date:	:
– m =	:
– b =	:
– Average Reading of FTS (Inches of water)	:
* FTS Flow should be within ±5% of 16.7 l/min	

Note: The serial # can be found inside of the door or on the side of the filter / sampling compartment.

2009

National Air Pollution Surveillance Network

2009 High-Volume, PM10 SSI, and Dichotomous Partisol Sampling Schedule

Réseau National de Surveillance de la Pollution Atmosphérique

Échantillonneurs à Grand Débit, MP SSI, et Dichotomique: l'horaire 2009

Thursday	1-Jan-09	jeudi
Wednesday	7-Jan-09	mercredi
Tuesday	13-Jan-09	mardi
Monday	19-Jan-09	lundi
Sunday	25-Jan-09	dimanche
Saturday	31-Jan-09	samedi
Friday	6-Feb-09	vendredi
Thursday	12-Feb-09	jeudi
Wednesday	18-Feb-09	mercredi
Tuesday	24-Feb-09	mardi
Monday	2-Mar-09	lundi
Sunday	8-Mar-09	dimanche
Saturday	14-Mar-09	samedi
Friday	20-Mar-09	vendredi
Thursday	26-Mar-09	jeudi
Wednesday	1-Apr-09	mercredi
Tuesday	7-Apr-09	mardi
Monday	13-Apr-09	lundi
Sunday	19-Apr-09	dimanche
Saturday	25-Apr-09	samedi
Friday	1-May-09	vendredi
Thursday	7-May-09	jeudi
Wednesday	13-May-09	mercredi
Tuesday	19-May-09	mardi
Monday	25-May-09	lundi
Sunday	31-May-09	dimanche
Saturday	6-Jun-09	samedi
Friday	12-Jun-09	vendredi
Thursday	18-Jun-09	jeudi
Wednesday	24-Jun-09	mercredi
Tuesday	30-Jun-09	mardi

Monday	6-Jul-09	lundi
Sunday	12-Jul-09	dimanche
Saturday	18-Jul-09	samedi
Friday	24-Jul-09	vendredi
Thursday	30-Jul-09	jeudi
Wednesday	5-Aug-09	mercredi
Tuesday	11-Aug-09	mardi
Monday	17-Aug-09	lundi
Sunday	23-Aug-09	dimanche
Saturday	29-Aug-09	samedi
Friday	4-Sep-09	vendredi
Thursday	10-Sep-09	jeudi
Wednesday	16-Sep-09	mercredi
Tuesday	22-Sep-09	mardi
Monday	28-Sep-09	lundi
Sunday	4-Oct-09	dimanche
Saturday	10-Oct-09	samedi
Friday	16-Oct-09	vendredi
Thursday	22-Oct-09	jeudi
Wednesday	28-Oct-09	mercredi
Tuesday	3-Nov-09	mardi
Monday	9-Nov-09	lundi
Sunday	15-Nov-09	dimanche
Saturday	21-Nov-09	samedi
Friday	27-Nov-09	vendredi
Thursday	3-Dec-09	jeudi
Wednesday	9-Dec-09	mercredi
Tuesday	15-Dec-09	mardi
Monday	21-Dec-09	lundi
Sunday	27-Dec-09	dimanche
Saturday	2-Jan-10	samedi

Maxxam Analytics Inc

Calgary: 2021-41st Ave. NE, T2E 6P2. Ph: (403) 291-3077, Fax: (403) 291-9468, Toll free: (800) 386-7247
Edmonton: 9619 - 42 Ave, T6E 5R2. Ph: (780) 465-1212, Fax: (780) 450-4187, Toll free: (877) 465-8889
Burnaby: 8577 Commerce Court, V5A 4N5 Ph: (604) 444-4808, Fax (604) 444-4511, Toll free: (800) 440-4808

ANALYTICAL REQUEST FORM

Invoice To: Require Report? Yes [X] No [ ]

Company Name:	Rescan Environmental Services Ltd.
Contact Name:	Michelle Van Wyck
Address:	600 - 1111 West Hastings Street
	Vancouver, B.C. PC: V6E 2J3
Phone / Fax#:	Ph: (604) 689-9460 Fax: (604) 687-4277

Report To:

Rescan Enviornmental Services Ltd.	
Dan Jarratt, P.Eng.	
600 - 1111 West Hastings Street	
Vancouver, B.C. PC: V6E 2J3	
Ph: (604) 689-9460 Fax: (604) 687-4277	

PO# / AFE#:	
Quotation #:	
Project # :	1009-002-02
Proj. Name:	**Hope Bay Belt Environmental Baseline Study**
Location:	Nunavut, Canada
Sampler's Initials:	__

REGULATORY REQUIREMENTS:

- [ ] AT1 - Soil Contamination
- [ ] CCME
- [ ] CCME FWAL
- [ ] Regulatory Limits to appear on Final report
- [ ] PST
- [ ] CDWQG
- [ ] G50

REPORT DISTRIBUTION:

- [ ] Mail
- [ ] Fax
- [X] PDF
- [X] Excel
- [ ] Other:
- [X] Email: djarratt@rescan.com

SERVICE REQUESTED:

- [ ] RUSH (Please ensure you contact the lab)
  Date Required:
- [X] REGULAR Turnaround

METALS: (WATERS)

- [ ] Total
- [ ] Extractable
- [ ] Dissolved

ANALYSIS REQUESTED

	Sample Identification	Matrix	Date/Time Sampled	Sample Type Grab/Comp	Hold > 60 Days	Sample Container #	Particulate mass (PM2.5)	Particulate mass (PM10)	Particulate mass (TSP)
1	23890	47 mm filter	3-Jul-08	Continuous	Y		X		
2	23891	47 mm filter	3-Jul-08	Continuous	Y			X	
3	23892	47 mm filter	3-Jul-08	Continuous	Y				X
4	23893	47 mm filter	9-Jul-08	Continuous	Y		X		
5	23894	47 mm filter	9-Jul-08	Continuous	Y			X	
6	23895	47 mm filter	9-Jul-08	Continuous	Y				X
7	23896	47 mm filter	15-Jul-08	Continuous	Y		X		
8	23897	47 mm filter	15-Jul-08	Continuous	Y			X	
9	23898	47 mm filter	15-Jul-08	Continuous	Y				X
10	23899	47 mm filter	21-Jul-08	Continuous	Y		X		
11	23900	47 mm filter	21-Jul-08	Continuous	Y			X	
12	23901	47 mm filter	21-Jul-08	Continuous	Y				X

** For water samples, please indicate if sample container has been preserved (P) and/or filtered (F).

Relinquished By: Mr. ____ _____ **Date/Time:** **September 8, 2008**

Signature:

COMMENTS/SPECIAL INSTRUCTIONS: these are 47 mm diameter filters from a Partisol air sampler, the attached note indicates volume of air filtered & sample time for each

Received

Temperature

C of C #